The Iron A

A Review of the Hardware, Iron and Metal Trades.

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Practical Application of Formulæ.

Various communications have appeared in our columns, from time to time, on the sub-Various communications have appeared in our columns, from time to time, on the subject of formula and its practical usefulness in mechanical affairs. The disposition on the part of some writers has been to poke fun at professors and college-bred engineers who make use of formula in their communications to the technical press. We have always believed that if practical men once comprehended the convenience of formula that applications would be made of them in directions that are at present undreamed of. The gradual introduction of formule into daily conversation is something quite noticeable of late. For example, it is not uncommon to hear school children, in expressing their opinion of a certain proposition, to assert on the date of the communication of a certain proposition, to assert on the subject of formula in the case of the management of their management of their management of their mind an instance that recently occurred, which illustrates the importance of this method and its application. A young engineer having occasion to employ a force of laborers found, after a series of tests and observations, that in the case of John Jones V = \$5, W = 30 cents, T = 10 and that they "contemplate not only supplying the Canadian market, but supplying as well a large portion of their foundation in fact. They have in contemplation that city for the purpose of repairing goods of the said Jones. The practical assefulness of formulae in determining this result in the case cited is so manifest as to of their own manufacture. This repair shop, if erected, will be similar to those already in operation in the principal cities in the United hear school children, in expressing their opinion of a certain proposition, to assert that something is "T. T.," meaning, in the slang of the day, "too diaphanous." Again, when some one is quite indignant at the conduct of another, instead of going to profane extremes and calling him an idiot, coupled with an adjective having a sulphurous smell, it is quite customary in certain quarters to say he is a "D. F." Still another instance may be result in the case cited is so hannest as to if erected, will be similar to those already in operation in the principal cities in the United States, and will not be used for manufacturing their goods. The plans for this enterprise are not yet matured.

The Philadelphia Ledger says: The manufacturing industries of H. Disston & Sons, at Tacony, are assuming almost mammoth proportions. The buildings for manufacturing and out of blast up to July I, it appears that

cient of the said John Smith. It is at once apparent that if V k is less than W T + E poses, free, the buildings belonging to others the services of said John Smith can be dispensed with at a profit. This method enables proprietors to readily determine the variety of their variety for ways of the variety for way

working railways, the consequent loss of Prizes in gold and silver medals are offered time and several other items are, moreover, elements which, at present, prevent successful competition with foreign supplies. Improvements are, however, slowly and steadily progressing, as shown by official statements which, for the year 1881, record an output of 48,698,000 tons, this being an increase of 1,725,000 tons over the yield of 1880. In the year 1856 only 8,634,200 tons of coal were mined, the quantity increasing slowly year by year until 1870 the figures were 26,397,000. From that date the rise was more rapid, the annual increase being about 3,000,000 tons. In 25 years, therefore, the increase has been nearly sixfold, and the supply and consumption have been as follows: time and several other items are, moreover,

A	TO 1 1 1 1 1	
The American	1856-60. Tons.	1861-65. Tons.
Production	52,963,000	57,819,000
Imports	5,500,000	7,000,000
Exports	2,500,000	4,000,000
Consumption	55,463,000	90,819,000
Average production per ann	10,592,600	17,763,800
1266-70. Tons.	1871-75. Tons.	1876-80. Tons,
Production 324,214,500	172,425,000	204,570,000
Imports 8,000,000	10,409,500	10,914,000
Exports 5,000,000	20,380,000	29,370,000
Consumption127,842,000	161,455,000	185,054,000
Av. p'd'n per ann 24,842,900	34,485,000	40,014,000

for appliances of sufficient merit. Gas en-gines are admissible for exhibition, but not to compete for prizes. No charge will be made for space and gas will be supplied

Keller & Binzegger's Compressed Air Pump.

Among the many interesting exhibits at the last agricultural exposition in the Champs Elysées, Paris, was a pump worked by compressed air, and manufactured by Messrs. Keller & Binzegger. The pump consists essentially of two distinct parts. First, the compressor, which may be placed at any desired distance from the source of water, and second, the pump proper, or rather valve box, which is placed in the well or water reservoir. The engravings of this pump, which we present to our readers this week, and for which we are indebted to our contemporary. which we are indebted to our contemporary, the Revue Industrielle, are well adapted to give a clear idea of the working of the apparatus, and will undoubtedly be found interesting. Communication between the com-

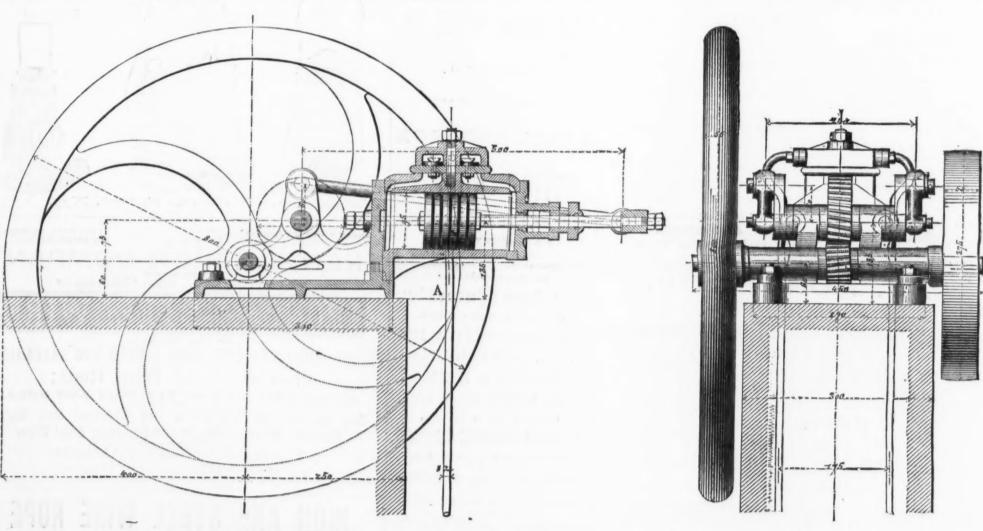


Fig. 1.-Elevation and Section of Air Compressor.

KELLER AND BINZEGGER'S COMPRESSED AIR PUMP.

Fig. 2.-End View,

be cited. A convenient abbreviation in the 'ing purposes already erected cover six acres shape of a formula, quite commonly employed by certain persons with whom we are ac
will follow in the early future, until, in the land the number of furnaces at work has of this simple expression is clearly apparent. Another expression often employed with considerable earnestness in personal altercations is happily rendered by formula as follows:
"D. L.," in which "L." stands for an aggraated condition of moral strabismus, and 'D." an adjective intensifier of varying de-

Besides the utility of a formula for express ing personal qualities, it furnishes an effective heans for expressing the value of those qualities in a practical way, as well as services and opinions. The manufacturer, for instance, can, by taking the average of a series stance, can, by taking the average of a series of observations, determine the coefficient of efficiency of each employee, and tabulate them in the usual manner. Then by apply-ing the graphic method, and upon a given ecting, at regular intervals, ordinates equal to the several coefficients found, he can determine the general curve of efficiency of the employees of the establishment. Having done this, if he wishes to find any of the several efficiencies of employee John with for example—say the efficiency of his labor—he looks on the diagram opposite the name of John Smith for the value of k, and then finds the efficiency required by the following equation: $\nabla k = W T + E$, in which

by certain persons with whom we are acquainted, and used when there is necessity for great hurry, is "P. D. Q." Now, the exact meaning of this phrase, translated into the common language of the day, is "with exceptional celerity." The wonderful saving in breath and space accomplished by the use of the works on Laurel street have yet been relieved. of the works on Laurel street have ye relinquished, the improvements at T indicating the natural increase of the business of the firm. The total number of hands now in their employ is about 1500.

The additions made to the Tacony works during the present year comprise an enlargement of the rolling mill by an extension 180 x 200 feet, making the mill 300 x 200 feet ing 6, 8, 10 and 12 rooms each, and being provided with all the modern conveniences of gas, water, bath, &c. The file, handle and long-saw making de-

The file, handle and long-saw making departments are all now at Tacony. The capacity of the file department is so increased that 1000 dozen files can be turned out daily. An additional engine, 26×60 , and of 2500 horse-power has been placed in the rolling mill. The works here have in use six engines, with a nominal power of 1000 horse combined. Steam pumps, capable of pump ing 1500 gallons a minute, are in operation

will been increased by three during the last six

The German Coal Trade.

Reviewing the condition of the German coal market for the past few months, it ap-pears that considerable fluctuations, both in prices and demand, were the prevailing featres, and though at times the outlook was gloomy and discouraging, it may now be safely assumed that the market was in but few instances in a more flourishing and animated condition at this season of the year in size; a shop for the circular-saw departinant 55 x 285 feet, two stories high, with a wing 60 x 50 feet of the same hight, and a shop for manufacturing saw-handles 80 x 40 feet. In addition to these, upward of 100 dwellings, 60 of them by the firm, have been erected in the village this year. Many of future is discernible in all quarters. Notdwellings, so of them by the firm, have been a feeling of satisfaction and confidence in the erected in the village this year. Many of the houses are of a first-class character, having 6, 8, 10 and 12 rooms each, and being provided with all the modern conveniences to be far behind the sanguine expectations which were entertained a few years ago. The opinion that Germany would, at no distant date, be entirely independent of foreign supplies was confidently expressed, and it was even thought that native supplies would become so abundant as to permit extensive shipments to foreign ports. Now, however, these wild projects have been abandoned, for, though German coal districts are perhaps not unfavorably located as regards exthen finds the efficiency required by the lowing equation: Vk = WT + E, in which lowing in 1500 gallons a minute, are in operation, the inadequate supply of means of drawing water from the river to supply the transportation and the almost complete exhaustion of the products by the coke and iron lowing equation: Vk = WT + E, in which lowing in 1500 gallons a minute, are in operation, the inadequate supply of means of drawing water from the river to supply the transportation and the almost complete exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhaustion of the products by the coke and iron lower exhau

coal, but as time passes and steady progress is made in these countries the subject is still worthy of note, and should be kept permanently and prominently in view by Great

It appears that the French Government is seriously contemplating the construction of a canal from Bordeaux to Toulouse, and the commission appointed to inquire into the scheme has quite recently submitted its report. The length of the proposed canal would be 270 miles, and its highest point would be 500 feet above the level of the sea. The necessary supply of water would be obtained from the Jaronne and minor streams, and the canal would admit of the passage of war vessels, which would save the considerable distance around Gibraltar in passing between the Bay of Biscay and the Mediterranean Sea. The supporters of the project to meet these requirements. The pump contend that its construction would, besides more obvious advantages, enable the vine to be raised, consists of two cylinders, f and m be cultivated along the water-way. The cost of construction is estimated to be considerable, and it appears questionable ings to prevent the entrance of solid subworth the expense.

or less extent, and the advance in Great the compressed air to the pump and the lat-Britain during the same time has been at the rate of 150 per cent. Bearing the last-menhaving performed its work. The compressor, after having performed its work. tioned fact in view, it will be readily observed that European countries could not seriously think of competing with English required, and consists of a cylinder in which works a piston connected, by means of a piston rod and two side rods, with two cranks on a common shaft. The latter is provided with a gear wheel having inclined The latter is teeth, as shown in Fig. 2, the wheel being actuated by a pinion mounted on a separate shaft carrying a fly-wheel and driving pulshaft carrying a fly-wheel and driving pulley. The larger gear wheel has 27 teeth and the smaller one 18. The fly-wheel is about 31½ inches in diameter, the driving pulley 14½ inches, and the cylinder of the compressor somewhat over 3½ inches. The cylinder overhangs the foundation, as shown in Fig. 1, and is provided with a valve chamber divided into four comportments, each two of which are in direct communication. Two of these compartments serve as tion. Two of these compartments serve stances, which might seriously interfere with

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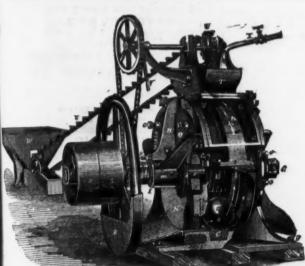
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tion between them and the cylinders f and m.

Two conduits, g g, moreover open into these cylinders and are closed by ball valves (more clearly shown in Fig. 6, page 7) at the point where the delivery pipe h begins. The compressed air works alternately in the two chambers f and m, and Messrs. Keller & second cylinder m, acting in a manner similar. chambers f and m, and Messrs. Keller & second cylinder m, acting in a manner simi-Binzegger, by an ingenious arrangement, lar in all respects to the one first described, have insured an automatic action. The The cylinder f at the same time communicates tubes l and l enter the chamber c, provided by means of the tube e with the chanwith four piston valves mounted on a common valve rod opening or closing the mouths haust pipe e, through which the air,

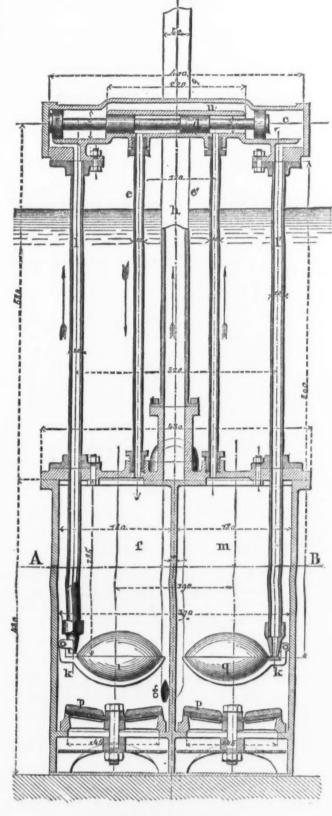


Fig. 3.-Vertical Section of Pump.

of the pipes l, e, e' and l', as the case may be. after having performed its work, escapes. Two tubes b and o, about 3-10th inch in diameter and of a length depending upon circles of the cumstances, establish communication between the chamber just mentioned and the filled as soon as the piston valves d have walve chest of the compressor. The tube b returned to their original position, and this action goes on automatically as long as the compressed air to the space below the channel a, while the tube a serves as an exhaust channel and issues from the chamber a. A small ball valve, r (see Fig. 6, page 7), personant channel a soon automatically as long as the compressor is in operation. Twenty strokes of the piston of the latter are necessary to drive out all the water contained in one cylinder. With a speed of 75 revolutions

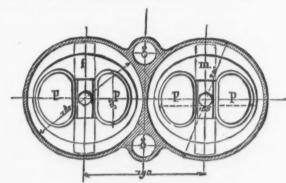


Fig. 4.-Section Along Line A B of Fig. 3.

mits the entrance of air into the compressor | per minute of the compressor, water may be at suitable intervals.

at suitable intervals.

Having thus given a brief description of the several parts of the apparatus, we will now describe its working as follows: Assuming the valves d (Fig. 3) to be in the position indicated in the engraving, it will be readily seen that the compressed air arriving through the tube b will, by means of the pipe e, enter the cylinder f, which we will suppose to be full of water. The pressure of the air will naturally force the water into the delivery pipe h, and as soon as the level of the liquid descends below the line of flotation of the valve i, the latter descends by its own weight and opens the orfice k of the pipe l. The air

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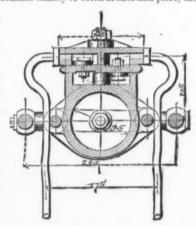


Fig. 5.—Section Through Cylinder and Valve Box of Compressor.

level of the rails being about 24 feet 6 inches level of the rails being about 24 feet 6 inches above the level of the streets. The length of the spans varies from 26 feet 3 inches to 49 feet 3 inches, and the arches are segmental, with a rise of ½6 to 1-3½ of the span, and with an average hight of 19 feet 8 inches from the level of the streets to the intrados. The width of the viaduct, measurements of the streets of the stre intrados. The width of the viaduct, measured along the piers, is 47 feet 6 inches, but, by stone coping, this is increased to 51 feet at the top of the platform. The two center lines are 13 feet 8 inches apart from center to center, the outer ones 11 feet 6 inches from center to center, the gauge being 4 feet 8 inches. The arches having been built with the view of heigh let out for weight the view of being let out for various pur-poses, large openings have been made in most of the piers to facilitate communication between the same. The span of the arches varies with the depth of the foundations, and the deeper the latter the greater the span.
The surface water is drained off by vertical shafts through the piers. The spandrels are built up with smaller arches, over which con-crete is spread, the whole being covered by a layer of asphalt and the ballast. In the center of the viaduct a small channel, 20 inches wide, has been sunk for the protection of platelayers and other inspecting offi-cials, and footpaths are arranged on both cials, and footpaths are arranged on both sides. The most interesting part of the vinduct is that in the Spree, being about 1980 feet long, and consisting of brick arches of 49 feet 3 inches span, 14 feet 1 inch rise, and piers built upon caissons. The foundations are either: (1) direct, (2) on concrete, (3) on concrete, between sheet piling; (4) on piles, (5) on stone wells or caissons. The two first require no further comment, but the following remarks may be of interest as illustrating the Continental way of treating the three st-mentioned descriptions of foundations. In the case of piles, the same are on an average 33 feet long, about 3 feet apart, con-nected transversely and longitudinally by strong sills, and the whole covered with a stout planking. The piles in each outer row are driven in at an inclination of 1 in 12. In the case of concrete between sheet piling, the latter is driven below the eventual depth of the foundation, the irregularities between the sheet piling being carefully calked; the material between the sheet piling is then dredged out and cement concrete sunk under water by means of large cylinders. This con-crete is left to harden, the remaining small crete is left to harden, the remaining small quantity of water is pumped out, and the pier built up, thus avoiding the necessity of a coffer dam. In the case of brick wells or caissons, the walls of the well are built up, two bricks thick, on an oak frame, the whole being tightly secured by strong iron bolts. The wells have a square section of about 13 feet, and are sunk by removing the earth from within. They are then filled up under water to a hight of 6 feet with cement con-

water to a night of o feet with cement con-crete, this being left to harden, after which the water is pumped out and the remaining 17 feet filled in with brickwork. The cais-sons are connected at the top by small seg-

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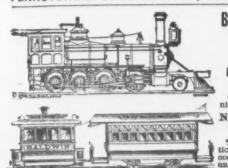
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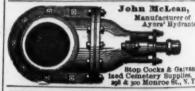
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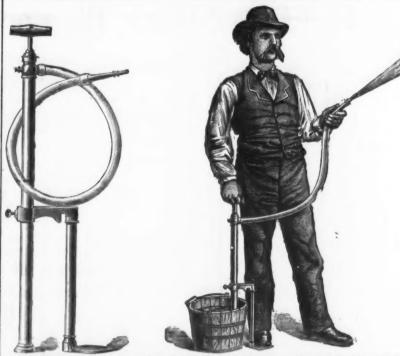
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Thiergarten. The other over the Spree, at the Museums Island, consists of two spans of 55 feet 8 inches, and 59 feet, separated by a pier 13 feet 2 inches thick, and crossing the have horizontal upper and lower booms, and

mental arches, and the piers or abutments of the columns, thus presenting nearly the are placed on the top of the whole in the usual way.

There are only two stone bridges on the whole line, one having a span of 78 feet 8 inches over the Schifffahrts Canal in the Thiraceart Theorem 200 the columns are provided with upper and lower ball hinges. The girders are anchored by means of strong bolts to the abutments, the object being to reduce all shocks to a

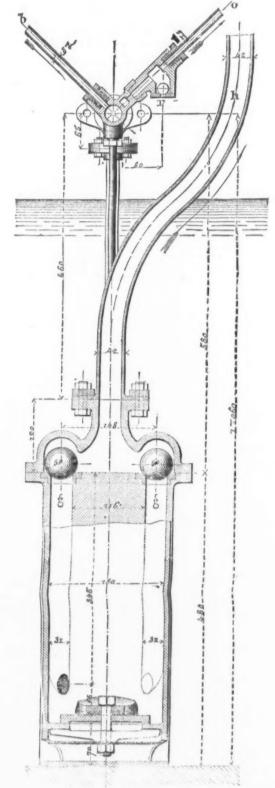


Fig. 6 .- Vertical Cross Section.

river at an angle of 35 degrees. In consequence of this considerable skew, the bridge has been built in 11 ribs on the square, tied together at the crown by iron bolts. Wherever the viaduct is visible from the streets, great attention has been paid to its architectural development.

In all cases where streets are crossed iron. In all cases where streets are crossed iron bridges are employed. Of these there are cylindrical granite piers, about 4 feet 6 inches diameter, which carry the four principal girders forming the bridge. The feet to 164 feet. The Berlin police regula-

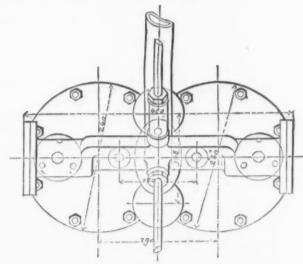


Fig. 7 .- Top View of Pump.

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Three-Square Blunt Files,

Slim Handsaw Taper,

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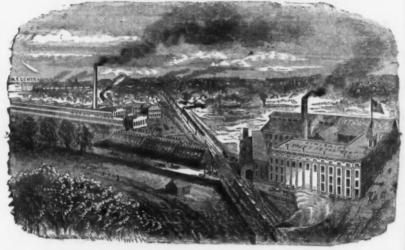
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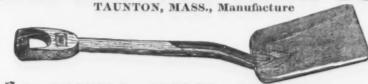
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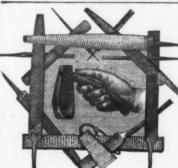
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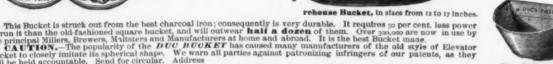


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perature is compensated on this one side. The two mid-stream piers rest on stone caissons, while the land piers are built on piles and on concrete between sheet piling. The bridge over the Humboldt harbor, consisting of seven spans of 101 feet 8 inches, deserves mention on account of its peculiar construc-tion. It consists of two trusses, the smaller

and lower booms of both trusses being riveted together and the smaller truss connected besides to the larger by diagonals. The girder is divided into four fields of about 24 feet 8 inches in width, and 12 feet 3 inches high, stiffened by vertical posts. The cross girders rest on top of the upper booms. The upper and lower booms are built up of 2 respectively 4 i rons strengthened by plates, the verticals consisting of 4 < irons. The bearings are constructed as ball hinges.

4. Trussed arched bridges. Seven bridges have been built on this type. The section of upper boom and arch is 1 shape to simplify the connection of the diagonals of the latticework, these having a \pm section. The plates joining the lattice-work to the upper boom and the arch have been kept as small as possible, so as not to interfere with the outline of the arch. At the crown of the arch the lattice-work is replaced by a plate. The lattice-work consists of double or single diagonals.

Elastic-arched bridges, or single diago-5. Elastic-arched bridges, or single diagonals, consisting of the arch and the upper horizontal girder connected by vertical posts. The section of the arch in this case is I-shape. Of this description only three bridges have

The superstructure of all five descriptions of bridges is constructed on two systems. The one, consisting of small trough girders filled with gravel placed on top of the cross girders, was soon abandoned on account of the difficulties experienced where the lines had to be widened out, and in the approaches to the stations in the introduction of switches to the stations in the introduction of switches and crossings. In its place a platform constructed of buckle plates, over which from 10 to 12 inches of gravel is spread, was adopted. These buckle plates are supported by the cross and small longitudinal girders to which they are riveted; they are about 4 feet 9 inches square and ½ inch thick. This construction between the plates of the plates construction naturally increases the weight of the bridges to some extent, but the many advantages, such as simplifying the laying of the permanent way, deadening the noise, &c., decided on its adoption.

Although the road has been in operation only a short time, the many advantages resulting from the rapid and convenient means of communication have undoubtedly been already recognized. In the course of a comparison of this road with the New York roads, the Railroad Gazette stated that probably four times as many men are required for the ticket service in Berlin as in New York. This statement has been objected to by the Journal of the German Railroad Union, which says that with any ticket sys-Union, which says that with any ticket system it is necessary to have the tickets examined on entering and leaving the train and during the trips, and that this is all that is done on the Berlin roads. According to the Railroad Gazette, this is three times as much as is done on the New York roads, where the passenger buys a ticket at a window, and a few feet further on, at the entrance to the few feet further on, at the entrance to the station platform, puts it in a glass box under the eyes of the gateman, and that is the end of the ticket inspection. If there were more than one class of tickets and cars, the work would be at least doubled, for it would then be necessary to see that those who entered first-class cars had first-class tickets; and if there were different discount with a least word different discount with a least were different discountered. there were different rates for different dis-tances, still more labor would be required, for it would be necessary to see that the pas-senger did not ride further than his ticket entitled him to, which might be done on the train, or by inspecting the tickets at the sta-tion where the passenger left the train. But the New York roads are only concerned to make sure that no passenger can get on a train without a ticket, and. as all tickets are alike, it is of little importance what car he enters or at what station he gets off.

Railway Statistics for 1881.

a correspondingly greater amount of capital a correspondingly greater amount of capital and labor was employed in the prosecution of the work. The cost, at \$25,000 per mile, of the lines constructed during the year was \$233,750,000; and as, in addition, some \$75,000,000 were expended on lines in progress, and \$100,000,000 in old roads, in improving the interval in building. gress, and \$100,000,000 in old roads, in improving their tracks, in building new stations and in adding to their equipments, the total amount expended did not fall far short of \$400,000,000. Although it was anticipated \$400,000,000. Although it was anticipated by many that this unparalleled activity would exert a depressing influence on railroad operations in 1882, it should be stated that such doubts have been dispelled most effectually, and it appears to be an established fact that for many years to come a much greater extent of mileage will be constructed annually than was constructed in the past or than will be constructed during the present year. The enormous extent of the United States, being no less than 3,000,-000 square miles, offers an attractive field for enterprise of this kind, and in almost every portion such works are rapidly progressing.

portion such works are rapidly progressing.

Aside from the more obvious advantages of increased railroad facilities, such as the speedy settlement and civilization of our Western States and Territories, the employment of both labor and capital is worthy of note, rolling mills, machine and repair shops, note, rolling mills, machine and repair shops, &c., being moreover patronized to a greater extent, and a beneficial influence exerted on the iron and steel industries of the country. The rapid increase of population is an additional favorable feature of the work which, as previously indicated, provides the means for the inland movement of large numbers, and outlets for the various accidental principles. New buildings have recently been exercted and improved machinery additional favorable dead improved machinery and the providers.

products. Poor says that the earnings all the roads in operation in the country during the past year were \$725,325,119, being an increase over the previous year of \$110,000,000, the rate of increase being bridge over the Humboldt harbor, consisting \$110,000,000, the rate of increase being of seven spans of 101 feet 8 inches, deserves mention on account of its peculiar construction. It consists of two trusses, the smaller of which hangs within the larger, the upper and lower booms of both trusses being riveted together and the smaller truss connected besides to the larger by diagonals. The girder is divided into four fields of about 24 feet 3 inches in width, and 12 feet 3 inches high, stiffened by vertical posts. The cross girders rest on top of the upper booms. The line, or about 1,200,000 in all. The number employed in the construction was 400, 000, thus increasing the total number to 1,600,000, or about one thirty-second part of our population, the latter being estimated at

> Present indications would appear to point to an enormous fall traffic on all roads, with a consequent appreciation of values in their securities and awakened interest in their extension and in all manufactures depend-ing on them. The tonnage of the various roads has also increased to a remarkable exroads has also increased to a remarkable extent within the past 30 years, convincing proof of this statement being furnished by the fact that in 1851 the value of the tonnage, at \$50 per ton, did not exceed \$250,000,000, against a value of \$12,000,000,000 in 1881. It may be interesting in this connection to submit the following statement by Poor, showing the number of miles of railroad constructed and in operation each year in the United States, from 1830 to the close of 1881 inclusive:

Year.	Miles in opera- tion,	Annual increase of mileage.	Year.	Miles in opera-	Annual increase of mileage.	Year.	Miles in opera-	Angual increase of mileage,
1830.	23		1848.	5,996	398	1866.	36,801	1,742
rBar.	95	72	1849.	7,305	1,362	1867.	39,250	2,449
1822.	220	124	1850.	0.021	1.656	1868.	42,220	
1532.	380	151	1851.	10.982	r,q6r	1869.	46,844	4.015
4034.	633	253	1852.	12,008	1.026	1870.	52,914	7,070
1835.	T,cg8	465	1853.	15,300	2.452	INTE	60,283	7,379
1530.	1,273	175	1854.	10,720	1,360	1872.	66,171	5,878
1837.	1,497	224	1855.	18,374	1,654	12572.	70.278	4,107
1838.	1,913	416	1850.	22,016	3.647	1874.	72,383	2,105
1830.	2,302	389	1857.	24,503	2,647	11075.	74,000	1,713
1840.	2,818	516	1858.	20,968	2,465	1870.	76,807	2.713
1841.	3,535	717	1859.	28,789	1,821	1877.	79.089	2 28 E
1842.	4,026	491	1860.	30,035	1.846	1878.	81.770	2,687
1843.	4,185	159	1861.	31,286	651	1879.	86,407	4.72 €
1544	4.377	192	1862.	32,120	834	1880.	93.671	7.174
1845.	4,633	250	1863.	33,170	1,050	1881.	104,813	11,142
1846.	4,930	297	1864.	33,008	738			
1847.	5.598	800	1865.	35,085	1,177			

The table is interesting in many respects, and shows concusively that, at the present rate of increase, our annual mileage will, no distant time, be something astonishing.

TRADE PUBLICATIONS.

REPORT OF NINTH CINCINNATI INDUSTRIAL EXPOSITION.

The report of the Board of Commissioners of the Ninth Cincinnati Industrial Exposition has come to hand, giving a detailed account of the exercises of the opening day, the rules governing the Exposition, and the reports and awards of the jurors. The report embraces somewhat over 300 pages, and is divided into nine departments, designated by letters from "A" to "I." The first de-partment is specially devoted to an exhaustive treatment of the stationary, portable and traction engines, railway rolling stock and traction engines, railway rolling stock and appurtenances, represented at the exhibition, and contains a large amount of highly interesting matter. Department "B" embraces minerals, metals, railroad supplies, hardware, stoves and heating apparatus, the space devoted to it being occupied chiefly by lists of the articles exhibited and the premiums awarded. The third department is similar in all respects to the one just mentioned ilar in all respects to the one just mentioned, tobacco, liquors, provisions, &c., however, being the subjects considered. Departments "D" and "E" give particulars of household furniture, ornaments, textiles, clothing. &c., but present nothing strikingly different, either in appearance or general arrange ment, from "B" and "C." Department Railway Statistics for 1881.

The extraordinary progress which characterized railway construction in the year 1881, and which has already been dwelt upon to a considerable extent in the various journals devoted to railway matters, is again strikingly shown in the advance sheets of "Poor's Railroad Manual" for the year in question. The greatest mileage for any previous year was 7379 miles in 1871, and as this figure was exceeded by almost 2000 miles in 1881, it can be readily imagined that a correspondingly greater amount of capital was 234,216, and the receipts during the

was 234,216, and the receipts during the four weeks were \$35,755. The tenth exposition will open on Sept. (and continue until Oct. 7. Attention is, in this connection, invited to the national character of these exhibitions, which have been held in Cincinnati since 1870. The ex-hibitions have, on account of their dignified character and value to the commercial in-terests of our country, commanded the atten-tion and confidence of exhibitors and visittion and confidence of exhibitors and visit-ors from nearly every State and Territory of the Union. The success which has attended them is, probably, owing in a great measure to their plan of management. The direct control is submitted to a Board of Fifteen Commissioners, five of whom are appointed by the Chamber of Commerce, Board of Trade and Ohio Mechanics' Institute, respec tively. Arrangements for reduced rates of fare have been made with the railroads radiating from Cincinnati, and persons de siring to visit the exposition will be furnished on application by mail to the secretary, with full information of rates of fare, &c. Liberal preparations have been made for the exhibi-tion of machinery in operation, and for the display of manufactures, works of art and products, and articles for the exposition may be sent from all parts of the country at low rates.

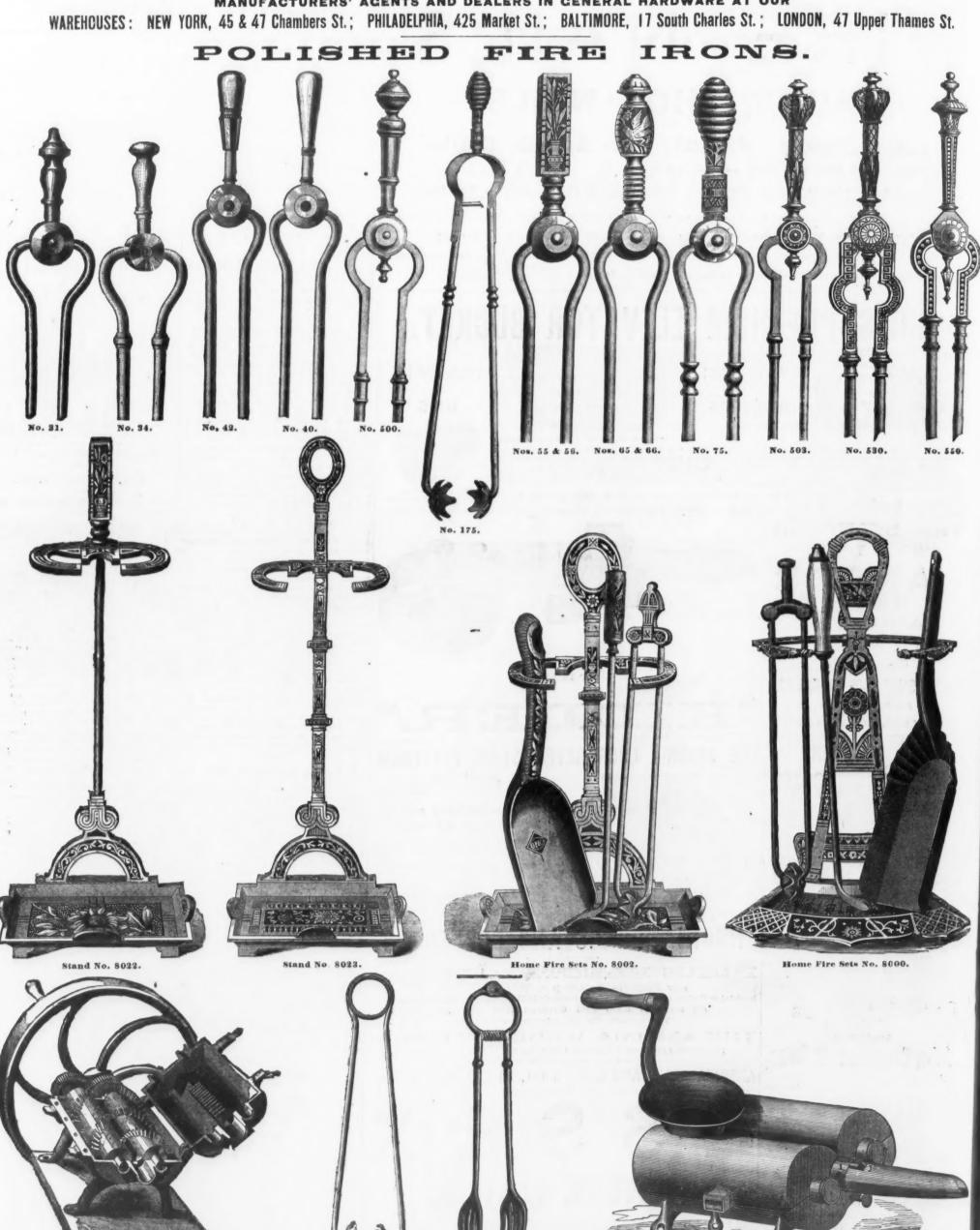
agricultural, mineral and metallurgical erected and improved machinery added, thus

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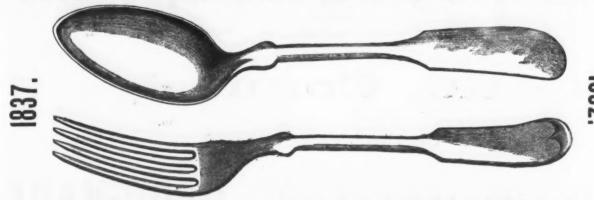
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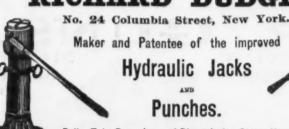
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Reese's Patents and The Bessemer Association.

The differences between the Besseme Steel Association and Jacob Reese, over the ownership of certain inventions and letters ownership of certain inventions and letters patent for manufacturing iron and steel, which is of long standing, came to a head last Friday by the Bessemer Association, through their attorneys, Messrs. Hampton & Dalzell, filing a bill in equity against Mr. Reese and the Harrison Wire Company, of St. Louis, and securing an injunction against Mr. Reese, restraining him from selling or transfering any of the numerous patents, &c., in dispute. The bill, which is very voluminous, sets forth that the plaintiff is a partnership association, organized June 22, 1874; that one of the provisions of the organization is to protect certain letters patent, the purchase of such other patents as the members of the association shall deem essential for carrying on business, grant the members of the association shall deem essential for carrying on business, grant licenses to use the patents by parties other than members of the organization, and the regulation of the terms upon which the members engaged in the manufacture of steel by the Bessemer or pneumatic process may use the patents in their several establishments.

PURCHASE OF REESE'S PATENTS. In the summer of 1879 the plaintiffs en-tered into negotiations with the defendant for the purchase of certain inventions, letters patent and applications for letters patent re-lating to the manufacture of iron and steel. On September 25, 1879, these negotiations resulted in an agreement between the parties, to which a supplemental agreement was added on November 5, 1879. This agreement carried with it not only the transfer to the Bessemer Company of the patents, letters patent, &c., therein described, but also conferred upon the company the right to own all such inventions and processes in the met-allurgy of iron and steel, or devices for the manufacture of pig iron or steel ingot, blooms, billets and plates as the defendant should thereafter invent and apply to have patented, together with all letters patent which should issue for all such inventions, in onsideration of which Mr. Reese was to reeive \$5000 and .05 on every ton of iron or teel, unless the number of tons manufacsteel, unless the number of tons manufactured would place the royalty in excess of \$10,000 a year, which was fixed as the limit. Soon after making the agreement the plaintiff company paid the defendant \$5000, and on October 22, 1879, the five letters patent described were assigned to the company.

LIST OF NEW PATENTS.

Subsequently the defendant filed applica Subsequently the defendant filed applica-tion for letters patent on the following inven-tions, and notified the company of the fact, at the same time requesting them to state whether they desired them: An improvewhether they desired them: An improve-ment in protecting carbon by the use of manganese in the Bessemer process; im-provement in regenerative metallurgical fur-naces; improvement in protecting carbon by the use of lime; improvement in the process and apparatus for cleaning and utilizing waste gases of blast furnaces; improvement in contributes sheet mill; improvement waste gases of blast furnaces; improvement in continuous sheet mill; improvement in blast furnace plants; improvement in the method of making lime brick; improvement in the basic process for the dephosphorization of iron; improvement in producing a metal high in phosphorus and carbon and low in silicon; improvement in dephosphorizing at the blast furnace for the same heat of motel. improvement in producing fibrous at the blast furnace for the same heat of metal; improvement in producing fibrous wrought iron from the converter; improvement in applying the conditions of the puddling furnace to the basic converter; improvement in indicating, preparing and solidifying materials for furnaces, and an improvement in the production of ferro-phosphorus. The playing protified Mr. Receiver. phorus. The plaintiffs notified Mr. Reese that they would take these inventions and furnished the money to meet all expenses,

HOW THE DIFFERENCE OCCURRED. Mr. Reese soon afterward notified the plaintiffs that several of the letters patent did plaintiffs that several of the letters patent did not clearly specify nor wholly secure several of the inventions, and requested to be al-lowed to apply for a reissue. The plaintiffs consented, but afterward was informed by their counsel that to secure the patents it was best to apply for original papers instead of reissues. This was under consideration when the difference between the plaintiffs and Mr. Reese occurred. On September 20, 1881, Mr. Reese and Mr. Andrew Carnegie signed an agreement under which Mr. Reese assigned all his right to collect royalties and all other rights allowed under the agreement all other rights allowed under the agreement of September 25, 1879, in consideration of an annuity of \$5000, and on condition that Mr. Carnegie would secure all letters patent with which there was any interference at the Patent Office, and also secure extensions of those the limit of which had been reached. This agreement Mr. Carnegie transferred to the Bessemer Steel Company, of which trans-fer Mr. Reese was fully advised. Upon the date of the signing of this latter agreement

largely increasing the facilities for turning cluded those belonging to the plaintiff and largely increasing the facilities for turning out work, and the establishment is now prepared to execute orders for all kinds of machinery. The catalogue contains the dimensions and prices of brass and iron valves and cocks, engine rod lubricators and guide cups, cocks, engine rod lubricators and guide cups, saw mandrels, wrought iron pipe and fittings, curing the benefits of the inventions described valuable aid to those intending to make purphers. Being located in the heart of and covered by the applications for reissues of letters on the certain inventions, and for which applications for original late. purchases. Being located in the heart of the lumbering districts, the manufacturer has had ample opportunities for observing and tosting the different styles of mills, and judging from testimonials contained in the catalogue, the various appliances appear to meet with general favor. embraced in letters already secured, of which supplemental letters he made no ten-der, but of the existence of which the plainder, but of the existence of which the plain-tiff learned through the list already men-tioned. In May, 1882, the plaintiffs notified the defendant that they would take all letters patent not already assigned and pay all ex-penses. They also offered, at various times, \$2500 which was due Mr. Reese, being the second installment of his annuity, which he refused or projected to take refused or neglected to take.

TRANSFERRING A PATENT.

About this time Mr. Reese executed to the Harrison Wire Company, of St. Louis, Mo., an agreement licensing them to use various patents for the making of heavy steel castings, producing different grades of steel from the same heat, and for producing steel high in carbon and low in silicon, in Jackson County, Ill. These patents had been tendered and accepted by the plaintiff, and were pur-chased by the Harrison Wire Company with between Mr. Reese and the plaintiff. The defendant corporation could not legally utilize the rights secured under this agreement, yet it was a cloud on the completeness of the rights rights. of the plaintiff's rights. On July 15, 1882, Mr. Reese demanded the \$2500 due under Mr. Carnegie's agreement, but was told that Mr. Carnegie's agreement, but was told that it would not be paid until he assigned all the aforesaid letters patent to the plaintiff. In consequence, on July 25 Mr. Reese notified the plaintiff that he would rescind the existing agreements. This, the plaintiffs claim, he has no right to do. They claim that no royalties are as yet due Mr. Reese, but they are willing to pay all that is due under the second agreement. The plaintiffs have been notified that Mr. Reese is about to, or may attempt to, sell the patent rights, which, though impossible for him to do, would involve the plaintiffs in expensive litigation. They ask the Court to grant a preliminary injunction until the hearing, thereafter to be made perpetual, restraining the defendant from selling the letters patent. They ask, al o, that the Court declare their rights under the agreement of September 25, 1879, and direct the assignment of all patents by Reese to them. Also that the agreement between the Harrison Wire Company be declared void. Judge Stowe granted the preliminary injunction, but fixed no time for a hearing.

The Iron Ore District of Bilbao in Spain.

The Biscayan hematite deposits which have seen known for centuries, and the developbeen known for centuries, and the develop-ment of which has, within recent years, at-tained such astonishing proportions, formed the subject of an interesting paper read at the spring meeting of the British Iron and Steel Institute by Mr. William Gill. Not-withstanding the fact that the vast subject was condensed to a considerable extent, it is impossible for us to give all the particulars dwelt upon, and we hope that the following extract, referring to the mines of the Bilbao district, will be found acceptable. Commencdistrict, will be found acceptable. Commencing above the town of Bilbao, on the left bank of the river Nervion, and taking them in order from S. E. to N. W., these deposits may be separated into seven groups, viz :

Brown ores, each mixed with clay.

Castrejana Brown ores.
Brown ores in large deposits.
Brown ore in large deposits.
Brown ore (not worked at present).
Triano and Red and brown ores (these are the Galdanes Brown ore.
Brown ore.

From official returns, the output of these mines in 1881 is ascertained to have been 2,800,075 metric tons; Metamoros, Triano, and Somorrostro having contributed 2,599,-204 tons, or about 93 per cent. of the whole. The iron ores found in these deposits are known locally as:

Campanil (Red hematite).
Rubio (Brown hemitite).
Vena dulce (A soft, rich ore, common to
both deposity).

The Campanil, under workable conditions, has hitherto been found only in Triano and Somorrostro, and forms but a small proportion of the whole. As it is the mineral most sought after at present, it is disappearing far more rapidly than the brown ore, which has only recently been exported on a large scale. It offers the greatest facility for extraction of any ore in the district. It is scale. It offers the greatest facility for extraction of any ore in the district. It is slightly inferior in metallic iron to the brown ores, but its freedom from siliceous matter renders its selection easy. The vena dulce is soft, of a deep purple color, and very rich in metallic iron. It is the ore that has been worked for centuries past in Biscay, by galleries and underground excavations. The remains of these show how extensive the workings must have been. The vena dulce is seldom wrought separately now, unless it workings must have been. The vena duted is seldom wrought separately now, unless it be in small quantities for special purposes, or for treatment in Catalan forges, or by the Chenot process. It is usually mixed and shipped with the other ores with which it may be in contact. The rubio is a hard brown ore, and when of good quality, is richer in metallic iron than the campanil. fer Mr. Reese was fully advised. Upon the date of the signing of this latter agreement Mr. Reese was paid \$2500, being the first semi-annual payment of the \$5000 annuity. About the 1st of January the plaintiffs were made aware of the fact that Mr. Reese claimed that there were certain letters patent connected with

THE BASIC PROCESS
which were secured prior to the agreement of September 25, 1879, and were not specified in that agreement. The plaintiffs claim that their agreement with Mr. Reese was intended to embody all the inventions of the defendant made before or after the agreement. A list of Mr. Reese's inventions was furnished to the plaintiff, wherein were in-

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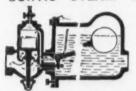
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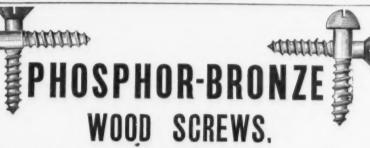


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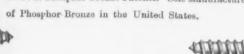


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Government engineers at about 160,000,000 tons some years since, and a project for the verification of this estimate by means of bor-ings is said to now be under consideration. In some campanil mines an intermediate bed of compact limestone exists, the ore below it being softer, and partaking more of the nature of vena, than that above. This intermediate limestone is not continuous, and, where it does not occur, the ore descends in an unbroken mass from the shales above to the limestone below. In brown ore mines, the vena, where it occurs, is generally found the vena, where it occurs, is generally found overlying the rubio, and with only a slight covering of clay, or vegetable earth. The rubio in this case deteriorates in quality as it descends, until at last it is so mixed up with spathic ore and siliceous matter that the cost of selection is considerably increased. There seems to be no absolute rule as to the relative positions of the rubio and vena; for, in some mines, the latter will underlie the former the ore growing purer as it descends. orders of position are observable in the Mat-amoros district. Certain of the rugged escarpments of rubia, that form such remarkable features of the brown ore mines, have probably been at one time covered with vena, which, being the softer ore, has been washed out. The two ores are often, but not invariably, separated by beds of clay. The following analyses give the average quality of the ore raised in the mines of the

	RedOre	Brown	Ore.
	Cam- panil.	Orco- nera.	Con-
Ferric oxideFe ₂ O ₃	78.03	79.96	78.29
AluminaAl ₂ O ₃	0,21	1,44	1.15
Manganous oxideMn ₂ O ₃	0.86	0.70	0.74
LimeCaO	3.68	1.00	0.50
MagnesiaMgO	1.65	0.55	0.02
SilicaSiO2	5.91	8.10	8.80
Sulphuric acid SO ₃	0.01	0.15	0.05
Sulphur	trace	0.05	0,04
Phosphoric acidPgOn	0.03	0.03	0,02
Carbonic acidCO2	5.00	-	7000
Combined waterH ₃ O.	4,60	8.25	10.55
	99.91	100.18	100.16
Metallic ironFE	54.62	55-97	54.80

The mines of the Bilbao district are staked out in rectangular allotments, the basis of superficial measurement being a rectangle of too meters square, termed a "pertenencia," of which four at least are necessary to con stitute a mine. Between the allotments ir-regular free spaces of less than four pertenencias frequently occur, termed "demasias," the right to the ownership of which is a source of much dispute. The right of minsource of much dispute. The right of min-ing is granted in perpetuity, a certain surface tax to the State being, however, required. The concession to raise mineral gives no right to the surface of the ground, but empowers the miner to appropriate it if neces-sary. With the development of the mines, this question of surface rights has recently this question of surface rights has recently become one of importance, affecting unfavorably the cost of raising the ore. It is complicated by the pretensions of the numerous squatters who have built tenements all over the district, owning no title, paying no rent, and yet blocking the way to the working of many mines. The older mines, having been granted prior to legal enactments as to area, are divided into small lots, and the majority of them are in the hands of several propries. of them are in the hands of several proprie tors, which is to be regretted, being fatal to good working, leading to waste mineral, and being a source of constant dispute. The overlapping of mine boundaries constitute The another source of inconvenience, and is partly due to the system adopted by the Gov-ernment of ranging the boundaries by the magnetic compass instead of by reference to a fixed meridian.

The general practice in the different dis-tricts is to let the quarries to small contract-ors, and their lack of reliability and experience in mining operations is a source of constant annoyonce. The quarrying is simple as, with the exception of an occasional shaft or heading, there is no underground work. All that is wanted is care in selecting the ore—a matter of trouble in wet weather. Machine drills are unknown, and the boring tool used is the ordinary jumper, worked by The maximum depth of hole iole required. s about 35 feet (Spanish.) Large blasts are ot practiced, 2500 tons being the largest on record. The holes, after being bored, are enlarged at the base by the ignition of a small charge of dynamite, and the blasting charges (powder for soft ore, and dynamite for limestone and harder material), are introduced and fired in the usual way. Very little judgement is exercised in placing the shots. The prevailing idea seems to be to drill a hole anywhere and put a big charge into it; hence a waste of labor and explo-sives, with pulverization of the mineral, and sives, with pulverization of the mineral, and its dispersion all over the quarry. The ore blasted down is broken up by hammers and wedges, selected, and is either hauled by railway direct from the quarry to the port, or passed by subsidary haulage systems to or passed by substanty hadings systems to one of the various railway depots, where it is put to stock to await shipment. Among other systems of transportation we would mention inclined planes, of which there are eight in operation, being self-acting with but

ne exception. The Orconera Iron Ore Company's Railway is about 7½ miles long, and enters the Cam-panil district some 656 feet above sea level. The rolling stock consists of eight main line and two shutting engines, two small locomo-tives for Orconera mine, 418 bottom-door mineral wagons, to carry 7 tons each, 80 4-ton incline wagons, and 22 ballast wag-ons. Two additional main-line engines of a ons. Two additional main-line engines of a more powerful type are now being built, the present engines being capable of hauling 20 wagons up the line. The river terminus is at Luchana, where are also the offices, repairing shops, and laboratory. The shipping appliances comprise four staithes, normal to the river, spaced 318 feet apart, and approached by embankments laid with self-acting gradients. The moorings consist of wagons up the line. The river terminus is at Luchana, where are also the offices, repairing shops, and laboratory. The shipping appliances comprise four staithes, normal to the river, spaced 318 feet apart, and approached by embankments laid with self-acting gradients. The moorings consist of five buoys in mid-channel, and eight dolphins between the staithes, besides the usual land bollards. The total river frontage is 1650 feet. Owing to the soft ground, it was desirable to carry the staith approaches across the swampy foreshore with as little hight as possible; and a still further inducement to this was the difficulty of raising the level of

nade anywhere. The quantity of mineral the Luchana station yard beyond a certain ontained in the Metamoros, Triano, and comorrostro deposits was estimated by the point. Under these circumstances loading by a simple inclined shoot was impossible, and a method of shipment had to devised requiring far less than the usual hight from high water to rail level. The arrangement now at work was designed to meet this difficulty. It consists essentially of a swing plat-form projecting from a timber tower, to which it is hinged at its inner end, on trunnions, being raised and lowered (like a draw-bridge) by chains, passing from the outer end and over drums on the top of the tower and counterweighted. To admit a light vessel under the tip, the platform is raised to a convenient angle, and, when the ship is berthed, it is lowered, and the wagons are run on to it, discharging their contents vertically into the hold through an open-mouthed hopper. To avoid injury to the tank tops of an er ship, from the unbroken fall of mineral, this hopper has suspended from it a telescopic arrangement of tubes, which are raised or lowered at will. The lower tube is provided with doors, so that, when required, the contents of a wagon are received and retained in the trunk. Upon commencing to load, the tubes are run up, and the doors closed; the charge of mineral is received in the trunk, which is then lowered by a hand-brake, the tubes sliding over each other, until the lower one reaches nearly to the bottom of the vessel, when the doors are opened by re-leasing a catch, and the mineral allowed to drop from a harmless hight. The tubes are then run up from another charge, by means of counterweights sufficient to lift them when empty, their ascent being controlled by the brake. The contents of four or five wagons brake. The contents of four or five wagons are thus put into the ship, after which the mineral is discharged through the trunk, with the doors left open. The trunk doors are closed by a small winch; in other respects gravitation, governed by a brake, does the work. In whatever position the platform may be, the trunk hangs vertically from it. The best day's work at one staith was to load three scarces are trunk to the state of war. three separate steamers with 2740 tons of ore in 12½ hours, including the time for berth-ing, making fast, and casting off.

The river of Bilbao possesses at present two defects which unfavorably affect the trade of the port, one being a sand bar at the entrance to the harbor, and the other, a want of space within the river for the convenient mooring and swinging of the ships.
The bar permits the passage of vessels drawing 15 feet to 15 feet 6 inches, during about four days of spring tides, but if bad weather provails, the port is practically closed to the exit of loaded ships, as soundings cannot be taken by the chief pilot, and without them no passage is permitted. At high water neap tides there is generally 11 to 12 feet depthon the bar, but at this draft steamers cannot carry a paying cargo, they prefer to load deeper and await the following springs. If they are then neaped the detention becomes serious, and, moreover, the fairway of the river becomes blocked up with loaded ships to such an extent that, when at last a favorto such an extent that, when at last a favorable sailing tide offers, confusion and accidents ensue. Extensive works are, however, now in progress for the improvement of the port, comprising a dock for loaded vessels; a river-cut to straighten the channel; about four miles of pitched quay walling; the dredging of about 3,200,000 cubic meters over a length of about eight miles of river bed, and the erection of an iron screw pile training jetty across the bar. It is expected that the completion of these works will permit the minimum depth of the channel to be maintained at 20 feet. The pilot service re-quires better regulation, and in view of the irregularity in the state of the bar, ships should be allowed to leave at night, when conditions are favorable, this being now

forbidden. In 1881, 3239 vessels, laden with 2,500,-532 tons of ore, sailed from the river for foreign ports, and the largest single cargo was 1690 tons. According to present indications there is every reason to believe that this outout will be maintained, the export of mineral for the first quarter of 1882 already exceedfor the first quarter of 1882 already exceeding that of the corresponding period in the previous year by 53,000 tons. The quantity of red ore exported at the present time exceeds that of other kinds, and is out of all proportion to the available supply. The present rate of output will cause a rapid exhaustion of the deposits, which, in 10 years, will undoubtedly be reduced to comparative insignificance, suppers fresh describe discovering the statement of the deposits of the significance, unless fresh deposits be discovered under workable conditions. The brown ore must, therefore, be considered as the main source of future supply, and it is fortunate that the quantity is sufficient to last for a long time to come. Nevertheless, the waste of ore in the district is lamentable. waste of ore in the district is lamentable, and the adoption of suitable measures to prevent it might yield highly profitable results. A return to the exceptionally high prices of ore in 1880 is hardly to be expected or desired, but it is hoped that the lowest figure will not be touched again for any length of time, as many mines will not be able, in that case, to work at a profit. A reduction in freights is anticipated, on the completion of the port improvements, which will both enable the purchaser to buy as cheaply as heretofore, and the miners of Bilbao to work profitably and compete with other districts.

Exhibition of Hornwork .- The Horn-Exhibition of Hornwork.—The Horners' Company of London purpose to hold an exhibition of articles, ancient and modern, British or foreign, made of horn, or of which that material is a component, exclusive of ivory, bone, or tortoiseshell, at the Mansion House, on October 18, 19 and 20 next. Prizes will be given to members of the trade. Further information may be obtained of Mr. C. H. Compton, 19 Great George street, Westminster.

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Differential Rates of Freight.

A truce in the ruinous "railroad war" was tacitly proclaimed when the several antagonizing companies consented to a reference of the questions in dispute to an 'Advisory Commission." Mr. Wm. H. Vanderbilt, of the New York Central, who seemed to have been most resolute in a determination to proscute the war, or at least to remain in a passive and independent position, is understood to have invited the reference, if, indeed, he did not originate the idea. The gentlemen selected to consider the subject of differential rates, the vital point at issue, were Allan G. Thurman, ex-Senator United States from Ohio; Elihu B. Vashburne, late Minister to Paris, and Thomas M. Cooley, Chief Justice of Michigan, whose report, after protracted investigation at the principal seaboard cities, has at last been presented. In explaining what is meant by the term "differential rates," as applied to the several termini of the trunk lines, they remark :

An idea of the extent of the differences is indi cated by the statement that, taking the charge cated by the statement that, taking the charges for the transportation of eastward bound freights from Chicago to New York as the standard, those to Boston are made the same, and those to Phila-delphia a cents, and to Baltimore 3 cents per 100 pounds less. On westward bound freights the differences are not uniform, but are made higher the case of those classes of property which are rated highest in the freight tariffs. As between the seaboard cities and St. Louis, Cincinnati, Toledo and other Western towns, the rates arproportioned to the Chicago rate acc nileage. This is the existing rule or practice

Contrary to what had been charged, they find "abundant evidence that New York is fully maintaining its present lead, and that its trade is enjoying a growth so healthy and vigorous that its commercial classes can well afford to regard without envy or regret the prosperity of other places, and may well concede to them. without repining, all the advantages which have come to them as a result of competitive efforts." In proof of this, the comnission present the following table, showing the relative proportion of the total receipts of grain and flour at the four Atlantic ports which was received at each:

					O ARRESTS
Nam Wash	1878.	1879.	188a.	1881.	1882
New York	0,	52.6	53-5	56.5	62.0
Boston	10.0	10.6	31.7	14-3	16.8
Philadelphia	16.7	15.3	15.6	88.7	81.6
Baltimore	17.3	22.5	19.8	17.5	8.7
Total	700.0	-	-	Office Share Service	-

The conclusion is that the existing differencials are not unjust, and, therefore, should not be disturbed; but they contend that they are liable to operate unfairly, and if, at any ime, "it shall appear that they tend to deprive any one of the seaports affected by them of the proportion of business that would naturally come to it under the operation of normal competition, the want of equity in the rates will appear, and it will be right to modify, or perhaps abolish them." In a word, the report leaves the nestion precisely as at the first. Nothing is definitely determined, so that the "war may be renewed at any time, by any one of the railroad corporations that becomes dissatisfied. For this and other reasons, the report is spoken of among merchants on Change as a disappointment. At present they admit there is little discrimination against New York, the old differences not having been restored, and it was hoped that, in settling the future policy of the pooled roads, the decision of the commission would serve as a guide. In their calculations, the distance and cost of transportion on compet-ing routes seem to have had little weight as controlling factors, nor the advantages of any particular port, whether natural or acquired through the enterprise of its citizens. In other words, as stated by a prominent railroad manager, the conclusions about the equity of differential rates are so vague in terms that they have little authority. It is intimated, however, by representative railroad men well qualified to speak, that the hostilities of last year are not likely to be renewed.

Pittsburgh's Water Works.

What with the strike at Pittsburgh, and the constant danger of a water famine-arising from the repeated breakages of the huge vater works engines, that city has no dearth of sensations. Of the progress of the strike we have kept our readers quite well informed : of the progress of the breakages, though they furnish more constant items than the strike, we have long ago abandoned all efforts to keep track.

On last Friday the Pittsburgh Dispatch, in an article on the engines, had the following resume of the situation at the water works Engine No. 1 has a cracked valve chamber, with a large pice: blown out near the top. It has, how-ever, been braced with three 4-inch and a number ever, been braced with three 4-inch and a number of 2-inch bolts, and clamped together like a mediæval cannon bound up with hoops. The engineers think they can start it to-day or to-night with one plunger, but doubt that it can do much work, because the wooden bulkhead can't stand

the pressure of ice pounds to the equare inch.

Engine No. 2. which is connected with No. 1. is
likewise weak in the valve chamber—nothing
more decided, however, than a few serious cracks
that have been frequently noted. A bulkhead in its valve chamber reparates the compartments of the two plungers, and it is ready for work with one plunger, and will start as soon as No. 1 is

Engine No. 3 worked weakly off and on up to 5 coclock in the afternoon, when she broke the wooden bulkhead in her valve chamber—just as Nos. rand 2 may be expected to do when started—and stopped until 8.20 for repairs. Starting again, she broke a dr. in valve on the cylinder and Priess (Concaused).

Forty-seventh Pane.—Philadelphia and Pitteburgh Hardware and Motal Prices

Engine No. 4. - Work would be finished this week Engine No. 4.—Work would be missined this week but for a delay caused by the Atlas Works failing to fit the castings together before they were sent from the shop. As it is it will not be ready for work in less than two weeks. Everybody knows that this engine has not turned a wheel for two years for want of repairs.

Having four engines put in at an expense of we have forgotten how many hundreds of thousands of dollars, in its strait Pittsburgh has been obliged to call upon the mills of the city, many of which have pumps of considerable capacity, to aid them in furnishing water for domestic consumption, and a number of their works are pumping into the mains. It is a curious fact in this connection that the old Eleventh street engines, which were condemned five years' ago, are still pumping water into the Bedford avenue basin, while all of the engines built on the plan that was to revolutionize engine building are broken down. It is perfect folly to charge that all of this is due to weak cast With the very large factor of safety demanded in the building of such engines even if the iron was as weak as claimed and the principles and proportions of the engine right, there would be no such constant breakages as appear at present. The only method of relief and the shortest is to imme diately abandon these engines, and make preparation for their removal and for the placing of engines built on well-tested plans.

Gradings for Tin Plates.

We call attention to an article in another column of this issue on "Tin Plates and Brands," from the Ironmonger of London. It possesses especial interest for us, as it shows that the leading iron and metal trades journal of Great Britain has adopted our view of the solution of the tin-plate question, and joined us in urging consumers to buy according to quality and with reference to ntended use, and not by name or on the assurance of dealers. The Ironmonger agrees with us in believing that "the consumer has the remedy in his own hands," and that if ne applies this remedy "the system of brands would thus be superseded to a great extent, and the present anomalous condition of affairs thoroughly swept away."

It is time that all sentimentalism on the subject of tin plates was abandoned, and that dealers and consumers should have a clear understanding. Speaking generally, brands are untrustworthy as indications of quality; and they always will be, for the eason that it is scarcely possible to maintain standard of quality which shall be uniform. We have known lots of inferior plates to be foisted on the market under brands which are everywhere considered safe guarantees of quality. is it that opinions as to the quality of certain brands differ so widely ? The answer 18, that sometimes they are one thing and sometimes another. They may average high or low; but the fact that the consumer who buys by brand does not always get what he expects, shows that he cannot trust the name The countless abuses which have sprung up in the tin-plate trade can, we think, be corrected only by a system of ccurate and honest gradings by reputable dealers. These gradings will be effected, not by a classification by brands, but by actual assorting according to quality, and the grading of a given lot of plates will depend simply upon what they are. The dealer may designate these classifications by such names. letters or numbers as he may choose. It will make no difference to the consumer whether one or several makes are sent to fill his order. If the quality he receives is what he has ordered and intends to pay for, it will that lead to the belief that important changes make no difference to him whether it inare not far in the future. The National cludes two or twenty brands, and whether Lodge of the Amalgamated Association is these are makers' or private. As we have

A Mexican Mercantile Navy.

already said in these columns, we believe this

Full details have come to hand respecting grand scheme which is about being carried nto execution by several wealthy Mexicans. inder contracts from the Government, for the establishment of several lines of ocean steamers, first to the United States, and afterward to Italy. Two companies have been formed for this purpose, both under the ame management, and almost the entire stock, amounting to \$4,000,000, has been taken by Bermajido Bros., old Spanish merchants and cotton manufacturers: Portillo's sons, who own some of the largest woolen factories in Mexico, and the Arena Bros., likewise largely engaged in manufacturing Another gentleman interested is Ignacio Pomba, Senator from the State of Oaxaca. They have made a deposit as a guarantee for the fulfillment of the terms of the contract. According to the stipulation. the Mexican Continental Navigation Com pany, as the new corporation is to be called, is to establish two services, one with steamers of 2000 tons burden from Vera Cruz to Progresso, Havana and New York, and the selling or transferring any of the numerous other, with steamboats of at least 500 tons patents, the ownership of which is in dispute burden, for Vera Cruz and Minitillan, Frontera de Tabasco, Leguna de Terminos, Campeachy and Progresso. The trips of the New tended litigation. The decision of the Patent York line are to be weekly, and the coastwith them. The second contract is for the Association with Mr. Reese of more imporestablishment of two other steamship lines—one from Vera Cruz to New Orleans, and not be devoid of interest to the entire iron Judge Haight's decision, which makes the the other to the Gulf ports of Tuxpam, Tam- and steel trade of the country.

pice, Bagdad and Galveston. These Continental lines are to be in operation before November 1, 1883. A new steamer of 1500 tons burden is to be placed on the New Orleans The Government is to pay the company a subsidy of \$1800 for each round trip. It is supposed, further, that the rates charged shall be from 10 to 15 per cent. less than those charged by Alexandre & Son's line, whose contract expires in September, 1882. The New York lines are to receive from the Government \$2000 for each round trip; the others, \$1800. It would thus appear that the United State are not only being left behind, but are actually in danger of being crowded ut, where our shipowners have already established themselves in the business of ocean transportation. The British Australian Colonies, the Dominion Government, and now China and Mexico, all find it advantageous to adopt the plan which has made England ruler of the wave," while the United States s still governed by the policy of inaction.

Launching of the Pilgrim.

The Pilgrim is at last afloat, launched after much tribulation. She stuck on the ways on get her off. The successful one occurred on the 22d. As is usual in such cases, the weight appears to have been greater than was anticipated, and consequently the grease was squeezed out of the ways and burned by the friction of her motion. It seems surprising that in yards where large vessels are constantly being launched such accidents should be allowed to occur. We have seen a large number of vessels stick during launching, and in every case, when investigation was made, it was found that the quality of the grease had been a little soft. some change had been made in its character for the purpose of experiment or economy, or that the area of the ways was a trifle scant. In this case, to effect the launch, the ways themselves were sawed out in 12-foot sections, greased and put back again. Five winding engine were all employed as persuaders. When she started, however, she made short work with helps of this kind.

An old builder, who has been launching ships for half a century, says in regard to this failure to launch the Pilgrim that, had castile soap been used instead of cheaper substitutes, the vessel would have gone off on the first attempt, and the saving in money would have been vastly more than the extra cost of the lubricant. It never fails in the hottest weather, and, we believe, is a safe lubricant under the heaviest pressure. An attempt at false economy has been in every instance save one of which we have any knowledge, the cause of vessels sticking on the ways. The great Eastern stuck on account of a blunder in the management at the time of the first attempt to aunch, and a misapprehension of the effect which the weight would have upon the rub bing surfaces. Unfortunately, one such disaster is not always sufficient to teach true economy. In some instances we have known three or four failures to occur in succession. It is to be hoped, however, that in this case the lesson will be learned without a repetition

The Labor Troubles West. There has been little or no change in the actual status of the iron strike since our last ssue, though there are many indications

nothing definite as to its action has reached idea would be popular with consumers, and us. Besides this, the most important news that a house which has the confidence of its since our last is the report that the customers could not do better than to adopt it. National Tube Works, McKeesport, are to start with non-union men. This anent caused considerable conster nation in the ranks of the Amalgamated The other McKeesport mill, W. D. Woods & Co., is already running non-union, and its successful and quiet oper ation while the tube works were idle, was a decided argument against the union's It was also well known that if the tube works undertook to run non union they would succeed at any cost. In their attempt they would be aided by the men in the

in session at Chicago as we write, but

tube department who are not members of the union, and who have been idle for over two months on account of a matter in which they have no interest. In the meantime there is no improvement in the demand for iron, and manufacturers would be troubled to get orders were they to start. Indeed, at the present time they could not start at once

if the strike was ended.

In another column we give the substance mer Steel Co., Limited, against Mr. Jacob Reese for an injunction restraining him from between him and the Bessemer Association. This is probably the beginning of a very ex-

A Holley Memorial.

We print in another column a letter from prominent engineer, discussing the proposed line, and one of 500 on the Galveston line. Holley Memorial Bronze, and approving the suggestion of The Iron Age that a Holley Mechanical Laboratory would be at once a more worthy tribute and one easier of accomplishment, though involving an immensely larger collection and expenditure of money. To a few of Holley's near and dear personal friends, a tribute which should be without a suggestion of utility would be more acceptable than one which was designed to be of practical value to living members of the profession. But this is a practical age, and to interest business men in a project of any kind it must have a beneficent purpose or promise profit. A great physical and mechanical laboratory is needed, and experience has shown that nothing will be gained by dancing attendance upon Congress with bills for appropriations to meet the ex penses of a United States test commission. The experiment when tried was only partially successful, and notwithstanding the fact that the bill to create such a commission was this year presented to Congress, with the stringent and most disinterested support which could be given to any measure, the chances of its favorable consideration are inthe 13th, and has resisted three attempts to finitely small. The most that will be appropriated is \$10,000, and we do not need to say how hopelessly inadequate this sum would be, if voted. But the discussion to which the bill has given rise in the newspaper press and in the engineering societies of the country, has called attention to the immense importance of a system of investigations based on careful and accurate tests of metals and structural materials. The interest felt among engineers and manufacturers in the information which can be gained in no other way is constantly increasing, and to create in the name of A. L. Holley an institution where such investigations can be carried on for the benefit of engineering science, under the management of committees from the three great technical societies with which Holley was so prominently identified, has an appropriateness so obvious tugs, a number of hydraulic jacks and a that the idea, if formally presented, would not, we think, fail to receive a hearty sup-We hope, as we said before, that the port. committee having this matter in charge will see their way clear to enlarge their undertaking to these worthy proportions, and that at the approaching meetings of the Civil, Mining, and Mechanical Engineers the subject will be fully discussed and the committees instructed. The Editor has written on this subject as a journalist, and not as a member of the joint committee. He will co-operate heartily with whatever is finally decided upon; but as it is understood that the cir cular of the committee was tentative, and had for its object to test the feeling of the professions and trades addressed, discussion of the plan proposed is peculiarly timely and appropriate Obligations of Freight Carriers.

> In the proceedings before Judge Haight the Supreme Court Chambers, instituted by the Attorney General, Leslie W. Russell, on behalf of the people against the New York Central and Hudson River Railroad Company, and the New York, Lake Erie and Western Railroad Company, for mandam uses to compel the railroads to receive and transport freight as common carriers, a decision was rendered by the Judge, in which he denies the relief sought. The issue of a writ of mandamus, he contends, can only be granted when there is no adequate or com-plete remedy at law. The railroad companies, in neglecting or refusing to receive and transport freight tendered by a citizen of the State, do not commit a public wrong war ranting such a resort. Rather, it is a pri vate wrong, for which the remedy is a suit for damages. Under the statute, "a discretion is given to the corporation to regulate the time and manner for transporting the property that shall be tendered to it. It is not in the power of the Court to look into the future and determine the kinds or quantities of freight that will be hereafter presented for transportation, and by an order specify how and in what manner the same shall be carried, or what kinds shall take preference.

So far as the application for a mandamus may have been intended to compel the railroad companies to grant the rate of wages demanded by the freight handlers, the judge seems to touch on the question incidentally One of the authorities which he quotes says The duties which devolve upon railroad companies by reason of the exercise of powers conferred by the Government for public purposes, must not be confounded with their obligations as common carriers for hire." As before observed, these latter duties or obligations can be enforced through the usual remedy, by action for damages It would appear, therefore, that the plaintiffs in the case against the railroads have failed of a bill filed by the attorney of the Besse-mer Steel Co., Limited, against Mr. Jacob what constitutes a public and a private wrong, and that if redress for grievances is obtained, it must be through another court. "Unreasonable delay" in handling freight must be considered a private wrong. Mr. Simon Sterne, attorney for the Board of Trade and Transportation, inti-Office in favor of certain of Mr. Reese's claims mates that the Attorney-General will appeal wise steamers are to be run in connection has made the contract of the Bessemer Steel to the General Term of the Supreme Court, which meets in October. We think there is great, though usual, mistake of placing

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corporations enjoying special charter privileges on a plane with private individuals that the object of the application for a mandamus was to compel the railroads to pay the that can be offered, and he will accept them rate of wages demanded by the striking freight handlers. The question was simply, shall the railroads, enjoying exceptional privileges and advantages, be required to render the public service in consideration of which these privileges were granted? It is true that the duties devolving upon the railroad companies, by reason of the exercise of powers conferred upon them by the Government for public purposes, should not be confounded with their obligations as common carriers for hire, but their first duty in consideration of these powers is to discharge their obligations as common carriers. Failing in this, they disregard the prime condition of their franchises. Civil suits for damages resulting from non-performance of their duties as com mon carriers, do not afford adequate relief. It is not damages, but transportation, the public want and have a right to demand. No amount of damages which could be established would pay for the injury resulting from a partial suspension by the railroads of their functions as common carriers.

The Tax Bill in the Senate.

Our readers have already been apprised through the medium of the Associated Press. of the virtual failure of the so-called "tax bill" in the Senate. This bill, it will be remembered, as it came from the House of Representatives to the Senate provided for a reduction of the internal revenue tax. As amended in the Senate it also provided for a reduction of the duty on sugar, and on steel rails from \$28 to \$20 a ton, and also provided that manufactures of hoop iron shall pay the hoop-iron duty. Those portions of the bill relating to the reduction of internal taxes had been acted upon in the Senate. The amendment providing for reduction of duties had been under discussion for two days, the sugar portion only being partially acted upon when the further consideration of the bill at present was abandoned and discussion begun on the naval bill. This is generally regarded as shelving the bill for the present session.

The abandonment of the bill was probably due to several reasons. In the first place, some Senators objected to several reductions that were made in customs duties, certain of them opposing the reduction in steel rails and others the reduction in sugar. Again, it was found that the bill was giving rise to such extended discussion that the idea of adjourn ment was postponed indefinitely, and some of the Senate, and especially members of the House whose nominations were in the balance, were desirous of adjournment that they might attend to their "fences." Still others believed that, as the question had been referred to the Tariff Commission, it was unwise and unjust to single out two or three items in the tariff and subject them to heavy reduction at the present time.

Whatever may have been the cause of the abandonment of the bill, we think it a grave mistake. One of the most pressing needs of the country to-day is the reduction of our Our surplus is enormous, and probably increasing. It is taking from the industries of the country an amount of money for which we have no use as a nation, and to that extent injuring our prosperity. It is furnishing a surplus for disposal that is an inducement and temptation to Congress to be extravagant, and to become concerned in projects that will bring disgrace and discredit upon us as a nation. Unless something is done to reduce the receipts, as soon as the present bonds which can be paid off are paid, which will be in the course of two or three years, our surplus must either accumulate in the Treasury Department and create a stringency in the money market and financial disaster, or taxes must be reduced so rapidly as to produce similar disorder. The se, cautious and prudent way is to reduce this internal tax so gradually that there the will be no abrupt measures to disorganize under the auspices indicated would not only the money market.

Importance of Correct Graduation.

Graduation and the appliances for gradu ating are among the most important mathematical and mechanical subjects which have ever engaged the attention of investigators. The subjects are by no means new ones. The efforts put forth in this direction are to be found at intervals in the history of mechanical progress, commencing as far back as the time when astronomy became a science and attempts began to be made to provide accurate instruments for use in investigating the heavenly bodies. Graduation, however, has an importance in modern fine workmanship which it never possessed at any previous time. It underlies all systems of standards, and is a count upon liberal support. Moreover, it question which must be conclusively settled would be well to make a full statement of

assumption that whatever may be branded est number of industrial interests, and, standard will be accepted as such without a therefore, greater facilities for personal obschallengs. Investigation is the order of the servation and experiments, is greatly to be of the dignity of the exchange. standard will be accepted as such without a who become common carriers without such challenge. Investigation is the order of the privileges. He was also in error in assuming day. Every man desires to know why the standards proposed for adoption are the best only when he is convinced upon this point. No organization or committee, however eminent, can secure the permanent adoption of any system of standards unless their efforts are seconded by an intelligent public opinion.

The Holley Memorial Bronze.

To the Editor of the Iron Age .- Your editorial comment, or rather suggestion, which is appended to the report of the joint committee of the three engineers' societies to provide a memorial tribute to A. L. Holley, that the tribute should, if possible, not be confined within the small scope offered by a bronze bust to be placed in Central Park, is sure to be re-echoed and warmly wel omed by a large number of engineers.

Those among us who knew Holley per-onally—who remember his quiet and simple lastes, his dislike of all empty show and ostentation—who remember the prominent fact in his career, that nothing that Holley ever did or undertook was lost or wasted cannot but feel that a bronze bust—and of all places in Central Park—is about as

an omalous a tribute as could well be paid to the memory of his grand and useful life. There is something of genuine satire in the idea of selecting Central Park, with its examples of bad architecture and worse engineering, and its collection of atrocious statuary, as the spot on which to place a bust of one of the greatest engineers of our century. Our experience here in New York with bronzes of great men is anything but encouraging. From Union Square, where Washington bids "Avaunt" to the ghastly shape in bronze pantaloons on the other side of the square, up to the Mall in Central Park, where Fitz-Green Hallock sits enthroned in supreme hideousness, our city abounds in supreme hideousness, our city abounds in warnings against sculptorial perpetuation, and the writer, for one, would not like to risk seeing "our Holley" in juxtaposition with, for instance, the piece of stonemason's work, executed in bronze, which the Park Commissioners have labeled "Thomas Moore.'

Altogether it seems doubtful if in this utilitarian age of ours the joint committee could interest a sufficient number of us to could interest a sufficient number of us to raise the necessary funds for such a purpose. On the other hand, the idea of a "Holley Mechanical Laboratory" would probably find not only no opponents, but a host of friend and advocates, both within and out-side of the profession. Aside from the fact that such an institution would, beyond doubt, be the most fitting and most enduring monument to him whose investigations of the properties of the useful metals have done so much toward the industrial development and progress of his country, and have furnished us with so broad a foundation to build further investigations. further inquiry upon—aside from the no less important fact that scientific investigations carried on under the auspices of the three great engineering societies could be kept wholly free from all political and army in-fluences, the scheme is one which would naturally commend itself most favorably to general and generous support for many other

Manufacturers, as well as engineers, fully alive to the importance to all of us of further and more thorough information re-garding the mechanical properties of struc-tural materials, and the influences which process of manufacture and chemical composi-tion exert upon the final product, and, like ourselves, cannot but see the utter hopeless ness of counting upon any material aid for such a purpose to come from Congress. In illustration of this it is only necessary to re-member that thus far only one House of Congress has shown a willingness to appropriate the miserable pittance of \$10,000 for the reorganization of a United States Testing Board, while both Houses promptly concurred in the resolution to devote \$15,000 to curred in the resolution to devote \$15,000 to the improvement of the "Cheese Quakes Creek," said to exist in New Jersey. The old saying of the French wars, point d'argent, point de Suisses, transposed into modern Congressional, would read, point de Boodle, point d'appropriations; and even if a sufficient amount could be secured for a scientific purpose, the commission would be sure to be more or less hampered by political wire to be more or less hampered by political wire pulling or the petty grievances of some dison the other hand insure swifter and more tangible scientific results, but the results obtained would also

ommand greater confidence.

Of course it would be incumbent upon the ommittee to elaborate, in the first place, a proper elaboration of this plan the success of the whole scheme would probably depend. If people are called upon to subscribe for such a purpose they will comply more cheer-fully and more liberally if they have put befulfilled longings. Let the form of organiza-tion be thoroughly well understood—let it be such as to command general confidence and to give assurance that the vital scientific questions of the day, in which the large industries as well as experts have an interest, will receive due consideration—and we can

est number of industrial interests, and, therefore, greater facilities for personal observation and experiments, is greatly to be desired. In this respect Pittsburgh or Philadelphia would probably prove to be the most desirable locations, and in either of the two places a "Holley Mechanical Laboratory" would be sure of a most hearty welcome and of substantial support.

come and of substantial support.

I fear I am trespassing upon both your space and your readers' patience; but the subject is one in which we are all deeply interested, and I find very many fellow members agreeing with you, that it would be well worth while for the joint committee of the three engineers' societies to try for the attainment of a larger tribute there a broave tainment of a larger tribute than a bronze bust to the memory of Alexander Lyman Holley, whose life work already claims for him, in the proud words of the poet of old—

"Exegi monumentum perennius ære." ENGINEER.

The Iron and Metal Exchange Com-

60 WALL STREET, NEW YORK, July 31, 1882 To the Editor of The Iron Age.—Sm: I take the liberty of asking insertion in your

pany, Limited.

columns of a few, perhaps not highly impor-ant, comments on the very able and interestng editorial article in your issue of the 27th entitled "The New York Mercantile

In the first place, it is hardly accurate, for urposes of comparison with the other exchanges, to put our membership at 165; this was, to be sure, the number of our associate memberships according to the list published June 9th, 1882 (there have been several ad-ditions since that date), but these 165 associate memberships stand for 165 corporations, firms and individuals who are represented in the exchange by 425 persons holding cards of admission, and the latter figure (425) should be the one given for comparison with other exchanges in which the membership is simply

Again, you say, in referring to the organization of this exchange: "The committee appointed by the chairman (of the meeting of February 15, 1882) took the unusual course of organizing what should be an exchange name rather than in fact."

in name rather than in fact."

Whether an association of manufacturers, merchants, consumers, transporters, and brokers for the purpose of providing a convenient meeting place, and supplying facilities for the conduct of conservative and legitimate trade, constitutes an actual "Exchange" or not, is, of course, simply a question of definition. Those who remember the Merchants' Exchange of New York, or are Merchants' Exchange, of New York, or are familiar with the working of some foreign associations, such as the Royal Exchange, of Middlesboro', might allow that such an association might logically and properly be called an exchange. But if a mixture of a large amount of speculation in fictitious values with a very small amount of exchange of actual values is necessary for the existence of an exchange, properly so-called, then I must admit that this comment has no ground

must admit that this comment has no ground to rest upon.

You say further, in your discriminating remarks on this exchange and the Pearl street association: "The business thus far done on the floors of the exchanges does not seem to have been of much consequence."

This is no doubt true of this exchange, so the exchange of the exchange of the exchange.

far as open transactions are concerned. it is also true that the associates are, in spite of dullness of trade and inclemency of weather, fast getting into the way of coming regularly to the exchange rooms for the very purpose for which the exchange was established, namely, to find out what is doing in the trade, and to be at a convenient place where they can meet a number of persons on business, without being put to the trouble of running about town to their offices.

There have undoubtedly been important ransactions initiated or consummated, in a private way, on the floor of the exchange, for its members are men of standing in the trade, who actually have merchandise to sell, or actually wish to buy merchandise, and they have not neglected the opportunities which the exchange, even in its infancy, has afforded them.

I make these few comments, not in a

spirit of criticism, but rather as supplemental to your editorial article. Very truly yours, ASSOCIATE.

o organization of a mechanical laboratory to misrepresent the facts in our editorial der the auspices indicated would not only article of last week. In a table giving the membership of the various exchanges in New York, it would have been unfair and mis-leading to give 425 as the number of associ-ate memberships of the Iron and Metal Excommittee to elaborate, in the first place, a plan for the organization, management and working of such a laboratory. Upon the and Metal Exchange Co., Limited, we find there are 165 names. The fact that each there are 165 names. name represents from one to three gentlemen having the privilege of the floor—2 19-33 to be exact—is interesting, but fore them a comprehensive plan of what is proposed to be done, instead of a vague idea of remote possibilities interspersed with unspections.

ship to the subscribers.

As the object of organizing the Exchange Company was probably to forestall the organization of an exchange on the basis of elective management and self-government it can scarcely be called an exchange in the sense in which that term is commonly understood in this country. In business lance, the term exchange has come to have a well-defined meaning and significance.

To correct any misapprehensions, we will say that we consider the Iron and Metal Exchange Co., Limited, an eminently respectable association of business men, which cannot fail, under existing coaditions of organization and management, to exert a whole-some influence upon the trade. It does not, however, realize the idea of an exchange, which is probably an advantage, as we doubt if the conditions existing in the iron and metal trades make an exchange possible. One of its most important advantages, it seems to us, is found in the fact that it brings the trades together and affords oppor tunity and encouragement for intimate per sonal intercourse. A large daily attendance will insure its permanence and success, and if this can be maintained it will probably come as near being an iron and metal ex-change as the trade has need of.

National Convention of Iron and Steel Manufacturers.

At a meeting of the Board of Managers of the American Iron and Steel Association, held at Bresson, Pennsylvania, July 25, 1882, the following preamble and resolutions were unanimously adopted:

Whereas, The tariff commission recently

reated by act of Congress has requested all of the organizations of the country which represent its leading industries to appear before it by committees or otherwise to give testimony and to make suggestions concern-ing the proposed revision of duties on for-eign products; and

Whereas, The American Iron and Steel Association is a national organization of long standing, which represents such leading branches of our iron and steel industries as embrace the manufacture of pig iron, the manufacture of blooms, the manufacture of all rolled iron, cut nails and forgings, and the manufacture of all kinds of steel : there

Resolved, That a national convention of all the iron-ore producers and the manufac-turers of iron and steel in the United States, and of all who seek to establish in our coun and of all who seek to establish in our country the manufacture of tin plate, be held at the Mountain House, at Cresson, at 12 o'clock on Tuesday, September 12, 1882, to consider the whole question of duties on iron ore, iron and steel in their various forms, and tin plate, and to adopt a schedule of duties thereon to be submitted to the Tariff

Commission for its consideration.

Resolved, That the convention, imm diately after its organization, shall be divided into sections, each section to represent a dis-tinct branch of the iron and steel industries of the country, including the production of iron ore. Each section will at once separately proceed to consider the existing duty or duties which affect the branch of manu facture or production in which its members are interested, and the conclusions which it reaches shall be submitted in writing to the general convention. When all the sections shall have submitted to the convention the result of their deliberations, the several rates of duty proposed shall be considered seriatim by the convention and amended or approved, as the case may be, after which the whole schedule of duties agreed upon shall be or-dered to be transmitted to the Tariff Commission as the voice of the united iron and steel industries of the country.

Resolved, That the complete schedule of Resolved, That the complete schedule of duties agreed upon by the convention shall be laid before the Tariff Commission by a committee which shall be composed of one representative of each branch of the industries represented in the convention, each section of the convention to choose the representative of the branch with which it is identified. The committee shall also present to the Tariff Commission a report in writing or in printed form which shall embody the reasons governing the convention in the adoption of the schedule.

Resolved, That we earnestly request a full attendance at the convention of all iron and steel manufacturers and iron ore producers and of all who desire the establishment of the tin-plate manufacture, and that we further request that those who may attend to come prepared to remain long enough to conclude the important work for which the convention

We print this very courteous letter with satisfaction, always considering it a pleasure to give those who consider themselves misrepresented the privilege of reply and explanation. We disclaim, however, any intention when the convention assembles each branch of the iron and steel industries represented or the iron and steel industries represented may be prepared to expedite the business of the convention; and it is also recommended to the local organizations, for the further dispatch of the business of the convention, that they prepare in written or printed form arguments and statistics sustaining the posi-

ons which they may assume.

Resolved, That the president and secretary of the American Iron and Steel Association be authorized to communicate to all iron and 33 to be exact—is interesting, but steel manufacturers and iron ore producers y 165, plus as many as have since contribute to the revenues, it was them also copies of existing duties on all iron and steel products and on iron ore, accompanied by appropriate references to adverse decisions by the Treasury Department and the courts affecting these duties. By order of the Board of Managers.

D. J. MORRELL President JAMES M. SWANK, Secretary.

It underlies all systems of standards, and is a question which must be conclusively settled before any progress whatever can be made in the direction of interchangeability in general machine construction.

The subject of graduation, including incidentally those of comparisons and fine measurements generally, is one in which measurements generally, is one in which as a direct interest. If any particular division of the yard is to become a standard and be generally adopted, it The telephone lines in St. Louis are getting particular division of the yard is to become

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American Institute of Mining Englners

We have just received a creular, issued by the acretary of the Amercan Institute of Mining Engineers, announcing that it has been impossible to obtain as lew special railway rates or the Denver meeting of the Institute as wis confidently expected. Owing to the Denver fining Exposition, which will be open at the tim of the visit, excursion rates to Denver, obtainable by everybody, have already been fixed and the railway companies have declined, inder these conditions, to make special arrangments for the benefit of members of the Institute. From this cause, principally, has resided the necessity for Eastern members to purchase tickets first to the terminus of a trunk 'ine, and from such point to Denver, the tickets being obtained to the property of the institute of the property of the prop such point to Denver, the ticats being ob-tainable, on presentation of cart orders, at the rate of two cents per mile. The card orders may be procured by applying to the secretary of the Institute, and each should be filled out with the name of the station where the ticket is to be purchased, and the same of the person (whether gentleman or lady) who is to use it. The latter name must be furnished by the secretary in advance to the members applying for cards should do so at once, giving full particulars. The tickets may be so taken as to permit the purchaser to go by one route and return by another, both being specified at the time of purchase. They are not transforable and rout to They are not transferable, and must be stamped by the ticket agent in Denver for stamped by the ticket agent in Denver for return use, after which they are good for five days, but not in any case later than October 31. The cost of the trip from New York via Pittsburgh and St. Louis, and return, apart from meals and hotal expenses, will be \$113, including the cost of sleeping cars, while according to ordinary rates it would amount to \$130. The officers of the Institute directly connected with the subject of transportation had diligently applied themselves to the task of securing all possithemselves to the task of securing all ble facilities, and the disappointment ex ble facilities, and the disappointment experi-enced cannot be attributed to any lack of effort on their part.

WASHINGTON NOTES.

(From Our Own Correspondent.) WASHINGTON, D. C., August 2, 1882. JUDGE FRENCH AND THE ASSISTANT SECRES TARYSHIP.

TARYSHIP.

It appears that the crusade which was carried on some months ago against Judge Henry French, of Massachusetts, incumbent of the responsible and difficult office of Assistant Secretary of the Treasury, has been revived. There seems to be an irreconcilable conflict between the protective tariff interests and Judge French. It was supposed that the two forces had reached an underthat the two forces had reached an understanding, and that this efficient officer would remain, but the original movement, reinforced by new forces, has again been set in motion, with what success time only can tell. So far Secretary Folger has opposed all efforts to make a change.

THE CANDIDATES FOR THE OFFICE.

There are this time two candidates for the office, the one is Mr. Umstead, of Pennsylvania, the other Mr. Decker, of Colorado. Mr. Umstead has served in the Legislature of Mr. Umstead has served in the Bench of that State, Pennsylvania and on the Bench of that State, and is a man of undoubted ability. He is and is a man of undoubted ability. very generally supported by the Pennsylvania influence, though he seems to have had this before, but it amounted to nothing so far as accomplishing any results were concerned. Colonel Decker is a native Illinois, though a resident of Colorado. was United States District Attorney there and a very efficient one too, it is stated and a very efficient one too, it is stated. The two Colorado Senators, Hill and Chillcott, are working industriously for him, and it is intimated that Senator Logan is also lending a hand. It is not improbable that the antagonisms generated by these rivals for the place may redound to the benefit of

place Mr. French, it might be stated that a few days ago he left for Long Branch in order to give the Tariff Commission the benefit of his information and experience in matters relating to the assessment of duties, the an praisement of imported articles, the conflict of rulings from time to time by different administrations, and also the entire diverger among the judicial tribunals in their adjudication of questions involving the same facts and coincident principles, which looks very much as if local interests had about as much to do with the decision as any points of law or fact. Before leaving he went over his views on the subject quite freely with the correspondent of The Iron Age. His main point before the commision seemed to be show the importance of simplicity in the arrangement of tables and classification, and above all the embarrassment frequently springing from ambiquity of terms. From the decisions of collectors and appraisers in the classification and valuation of imported articles there were frequent appeals to the Secretary of the Treasury, and this branch, Mr. French said, he had charge of. From these decisions the disappointed party frequently took appeal to the courts, and cases were on record where the New York courts decided one way, and the New Orleans courts the other, on the same question. He did not know whether justice differed in her view of matters, but it certainly was embarrassing and classification and valuation of imported but it certainly was embarrassing and confusing, to say the least. He said that

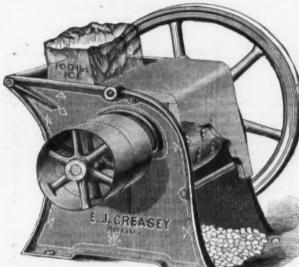




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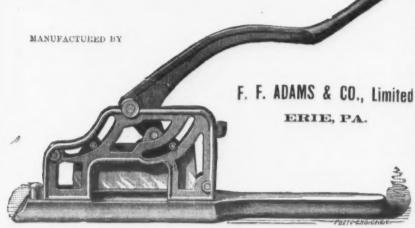
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WILMINGTON, DEL., April 17th, 1882. GENTLEMEN: -In regard to yours of March 29th, would say that in addition to the one bought of YOU in 1880 to run by hand, we bought one in 1881 to run by steam, and run through it 17 tons in less than two hours (No. A). We are now using both in different places, and like them very much. They are a much better machine for the purpose than any I have yet seen. Yours, truly, JACOB PUSEY, Prest., Kennebec Ice and Coal Co.

SAVES ICE, TIME, MONEY.

ACME TOBACCO CUTTER, No. 10.



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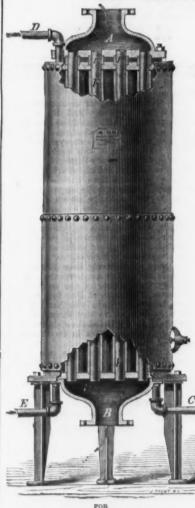
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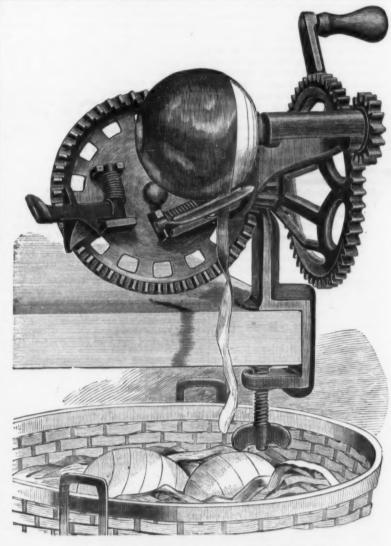
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having been framed in 1864, that the general dea was that the rate should be from 35 to to per cent. ad valorem. Mr. Oliver called attention to the fact that gold was then at a high premium, making that ad valorem rate equivalent to 70 per cent. Mr. French said that this was true. That then Bessemer was almost unknown, and as steel cost about 7 cents per pound, a specific duty of 2½ cents per pound was equal to about 35 per cent. ad valorem. Bessemer steel now costs about 1½ cents per pound, therefore an ad valorem rate of 35 per cent. would be a low rate. He further elaborated his posi-tion, and showed that the above changes of value were the principal cause of the con-troversies as to classification between steel and iron. He then took up the article of cut hoops and cotton ties, and went over the endless litigation on the decisions on these articles. Judge French repeated there what he had said here, that these were the causes of the controversies, and above all things it was important for the commission in preparing a system of tariff for legislation to avoid ambiquity and uncertainty in terms and schedules. Judge French, according to the published accounts, went over the ground very fully, taking up all of the leading arti-cles about the appraisement and classification of which there has been more or less controversy. No one is better able to talk on the versy. No one is better able to talk on the subject than he, and the members of the commission desired to get his views before going any further. A FLING AT THE TARIFF COMMISSION.

Mr. Van Wyck, a Senator from Nebraska, a few days ago surprised the Senate by the introduction of the following resolution: Whereas, the Tariff Commission, from its headquarters at Long Branch, on two occasions has imploringly appealed to the public for information and no response been

lic for information and no response been made thereto; Whereas, after inviting into its presence manufacturers, importers and traders, it is now wrestling with the serious question whether the gentlemen so invited can relate their experiences and explain their theories except first having an oath duly administered to tell the truth, evidently with the laudable desire to protect itself from imposition:

Therefore,

Resolved, That the Attorney-General (as soon as in his judgment he can prudently withdraw his personal attention from star-route prosecutions, and shall have fully satisroute prosecutions, and shall have fully satisfied the President and his Cabinet that Members of Congress are not officers of the Government, and as to the legality of political assessments) be directed to proceed to Long Branch to aid the said commission in determining the above important question, and other problems of equally grave import as they shall arise from time to time, and that he shall advise what to him may seem proper to protect the said commission from imposi-

It is apparent, from the general ten-dency of a number of gentlemen in one or the other branch of Congress to make light of the efforts of the Tariff Comdency of a number of gentlemen in one or the other branch of Congress to make light of the efforts of the Tariff Commission, that when the results of their labors come before Congress for public discussion they will be subjected to severe and searching criticism. The opponents of this plan of disposing of the tariff question are extremely bitter. The commission will certainly labor under no small disadvantage, largely on account of the shortness of the time in which to gather their information, and to carefully digest it preparatory to the preparation of their report. They propose, however, to do their best under the circumstances.

Now there are six ties to each bale, and the aggregate weight of these six ties is 11½ pounds to the bale, and the aggregate weight of these six ties to each saggregate weight of the saggregate weight of the

THE INTERNAL REVENUE AND TARIFF BILL In the Senate the discussion of the Internal Revenue and Tariff bill was continued after the close of this correspondence last week. The sugar interest and its opponents continued a somewhat spirited debate on Dutch standards, polariscopes and other matters appertaining to the complicated system of taxing sugar. As a rule when Senators, and members worse, get to discussing questions bearing upon the assessment of duties on such articles as sugar and iron they get into deep water, and generally demonstrate how little they know of the vital principles involved. As Bayard said, the establishing of a new basis for the sugar duty is a large question. This, however, did not frighten any one and the discussion went on until terminated by adopting a reduction amendment.

nated by adopting a reduction amendment.

The Senate then proceeded to the consideration of an amendment providing for a disration of an amendment providing for a dis-count of 10 per cent. after January 1, 1883, and an additional discount of 10 per cent. af-ter January 1, 1884, to apply to all taxes and customs duties imposed by laws now in

Mr. Vance, of North Carolina, indulged in ome remarks which were almost incendiary in their character, being calculated to incite the American laborers to greater discontent than many of them even now exhibit. He said: "There is a day of reckoning coming so sure as we all shall live to see it. You than many of them even now exhibit. He said: "There is a day of reckoning coming so sure as we all shall live to see it. You cannot always fool people by saying that the high tariff is kept up in the interest of American labor. That is the invariable excuse. We want the tariff kept on because we want to protect American labor against foreign labor. If I were going forth as the apostle of free trade, I would not go to the fields and the agriculturists. I would go to the fields and the agriculturists. I would go to the factories of New England and iron forges of Pennsylvania and talk to the men there. American labor simply means the pocket of the American capitalist. They are already beginning to open their eyes." The Senator may give him an opportunity, but there is not much inclination to be good for articles requiring strongth, may be advantageously employed for the production of ornamental and other casterings in which sharply-defined outlines are desirable. kept up this sort of harangue for some time, desirable,

enced, that these inconsistencies might be and was vigorously taken to task by Senator remedied. He referred to the steel tariff as Hoar.

THE REVENUE AND TARIFF BILL SET ASIDE. It being apparent that the discussion of the bill would be protracted beyond all reasonable limits to the delay of the appropriation bills, Mr. Hale on Wednesday made his expected motion to take up the naval appro-priation bill. Mr Morrill, who had charge of the revenue bill, said that if that motion or the revenue bill, said that if that motion should prevail, he hoped that it would not be by votes on his side of the chamber. He then proceeded to give a very fair and concise resumé of the bill as it came from the committee and the different amendments proposed. He said that the bill was such as should have received consideration and final action in one day. The fixtrattal should have received consideration and final action in one day. The first part proposed to repeal the stamp taxes and leave nothing of the internal revenue but the tax on circulation of banks and upon whisky, tobacco, ale and beer. He said when the bill came into the Senate the only fault found with it was that it did not go quite far enough, and to gratify this desire it was agreed to report a reduction on succession. agreed to report a reduction on sugar and Bessemer steel. Mr. Morrill said that all he Bessemer steel. Mr. Morrill said that all he asked was a vote, instead of which, the other side heaped up amendments and entered on a wide and often irrelevant debate. He then said that he desired to call attention to the said that he desired to can attention to the 40 amendments, selecting some of those submitted by the other side of the chamber; and andments, saleding some of those submitted by the other side of the chamber; that the Senator from Kentucky (Beck) had an amendment to reduce the duty on Bessemer steel from \$28\$ to \$1.4\$; that the Senator from Mississippi (Mr. George) proposed to reduce the duties upon a great many articles of ironwork, like wrought iron, nuts, iron bars, rails for railroads, boiler iron, railway bars, &c., to 7-16th of 1 cent per pound; that the Senator from Kentucky (Beck) had a radical measure in favor of free ships; that the Senator from North Carolina proposed to reduce the duties one-half upon "all vessels of cast iron, stoves, and stove plates, cast-iron butts and hinges, and hollow-ware glazed or tinned." This set up a general debate somewhat after the style of an experience meeting, in which one side tried to throw the blame on the other. side tried to throw the blame on the other. Senator Maxey said that for the year end-

Senator Maxey said that for the year ending Dec. 31, 1879, the importations of Bessemer rails at the port of Galveston amounted to \$3,40,000, and for the year ending Dec. 31, 1880, \$3,776,916. He then attacked the eight Bessemer steel companies in the United States, because they were not able to make rails fast enough, and the companies in Texas would rather pay the duty than lose the 10,240 acres of land the State gave them. He then spoke quite elaborately on the interest of the South in free hoop iron, adducing the following data: "This bill under review professes on its face to be a bill for relief and for the reduction of the taxes of the lief and for the reduction of the taxes of the people, and it is a remarkable fact that the they shall arise from time to time, and that he shall advise what to him may seem proper to protect the said commission from imposition by men wise in matters of trade and revenue, either by stringent oaths or pains and penalties.

It will be remembered that Van Wyck was not only a bitter opponent, in the Senate, of the Tariff Commission bill, but before that made a speech which his constituents did nor indorse, having been susceptible of a free trade construction, in which they took no stock. Its erratic author has ever since been trying to convince them that it was not intended for a free trade boom, but was protection all through. This resolution restock of the transport of the state of the transport of trade and revenue, which is \$12.81 per ton. The amendment of the transport of the transport of trade and revenue, either the people in all this country this bill are the people on are the people whom I, in part, represent. You may look to the fifth section of the bouth pay on cotton ties is 150 per cent. I will show that: Hoops, cut to lengths, splayed and punched, are worth per ton, free on board a vessel at Liverpool, £7. 10/2, equal to \$36.60—that is, all charges paid, ready to come to the United State. The present duty is 35 per cent. Advanced that the only people in all this country whom I in part, represent. You may look to the fifth section of the bill, and the increase which the people of the South pay on cotton ties is 150 per cent. I will show that: Hoops, cut to lengths, splayed and punched, are worth per ton, free on board a vessel at Liverpool, £7. 10/2, equal to \$36.60—that is, all charges paid, ready to come to the United State. The province them that it was not intended for a free trade boom, but was not intended for a free trade boom, but was protection all through. This resolution created quite a stir in the Senate, as it was regarded as trifling, and was promptly "sat down upon," as the saying goes.

DISPOSITION TO UNDERRATE THE TARIFF COMMISSION.

It is apparent, from the general tendency of a number of gentlemen in one dency of a number of gentlemen in one

lief of the people! THE VOTE ON THE MOTION.

After some sparring, at the expense of the Chairman of the Finance Committee, who was twitted as having delivered the funeral oration upon the bill, and retorted that it oration upon the bill, and reserved would be a lively funeral oration before he would be a lively funeral staken. The 33 was through, the vote was taken.

The force of the determination of the Republicans to pass the proposed reduction of taxes is shown by the enormous increase of public expenditures. In 1881-2 the total appropriations were \$216.604,388. In 1882-3, the present fiscal year, they reach \$294,573,-000, which does not include the payment of the principal or interest of the public debt. In 1880-1 the total appropriations were \$190,000,000. The great increase of the present year was occasioned by the Pension, River and Harbor, Miscellaneous and Deficiencies.

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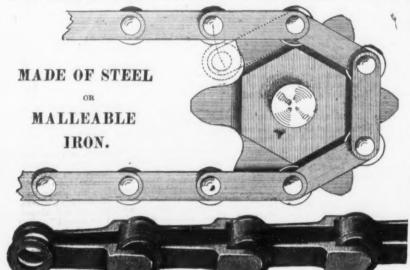
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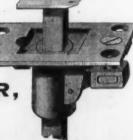
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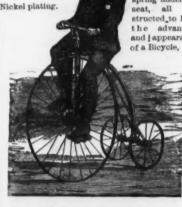


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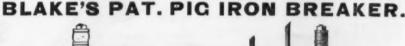
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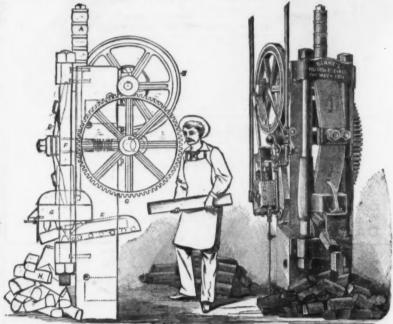
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the turret stapered end eye to suita cured by a hand-lever

end of ceives on the

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Secor's Screw Machine.

elegant and symmetrical proportions, and ple and durable. The locking device is prothe details are extremely interesting from vided with gibs, and has a tapered fit in the he nicety of adaptation of means to ends tapered notches in the steel-locking ring on direction.

The requisites for the chuck of screw mathematical proportions, and ple and durable. The locking device is prother in the direction.

The requisites for the chuck of screw mathematical proportions, and ple and durable, in the steel-locking ring on the details are extremely interesting from vided with gibs, and has a tapered fit in the chicking device is provided with gibs, and has a tapered fit in the chicking device is provided with gibs, and has a tapered fit in the chicking device is provided with gibs, and has a tapered fit in the chicking device is provided with gibs, and has a tapered fit in the chicking device is provided with gibs, and has a tapered fit in the chicking device is provided with gibs, and has a tapered fit in the chicking device in the chicking device is provided with gibs, and has a tapered fit in the chicking device in the chicking device is provided with gibs, and has a tapered fit in the chicking device in the chicking device is provided with gibs, and has a tapered fit in the chicking device in the

New Screw Machine. - Designed and Built by Jerome B. Secor, Bridgeport, Conn.

thus prevents the undue wear common to thimble D, a strong friction is had on the of C and of F are at a right angle to the firmly screwed to and received into R. We give herewith a general view of a screw machine, with details of construction, designed by Mr. Jerome B. Secor, of Bridgeport, Conn.

This machine, as will be observed, is of learning and support of the street of the tripping, locking and shifting devices are of steel, and are all large, simple to the square end. The locking devices are of steel, and are all large, simple to the square end. The locking devices are of steel, and are all large, simple to the square end. The locking devices are of steel, and are all large, simple to the square end. The locking devices are of steel, and are all large, simple to the square end. The locking device is used at the other end of the slide to stop it in the opposite discontinuous proportions.

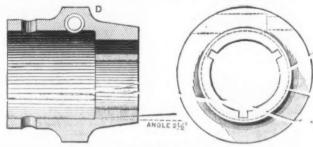


Fig. 5 .- Shell of Chuck,

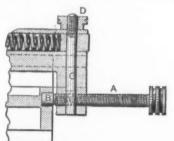


Fig. 6.-Stop Adjustment and Lock.

which it slides. P is clamped in its required



throughout. Particular attention has been given to the adjustments and stops, which are all of the most perfect description, neither gibs nor check-nuts being employed, except in a single instance, the latch which latches the turret in position having a substantial gib held to place by three set-screws to compensate for side wear. This latch, it should be noted is left in most screw may be the under side of the turret, so that all wear outside diameter, range of adjustment from a range of work from the full diameter of the bore of H down to zero. The capacity of grip, durability. All of these points are fully covered in the chuck of the Secor screw at the back end of the machine, and a screw which passes under the head-stock, and is

SECTION THOUGH CENTER OF SLIDE 0 nnnank 316 Fig. 2.—Details of Slide, showing Stop Motions.

Fig. 2.—Details of Slide, showing Sto

to compensate for side wear. This latch, it should be noted, is left in most screw machines without any arrangement whatever for taking up the wear. Decidedly novel features are introduced in the chuck, in the turret-revolving and latching-up mechanism, in the wire feed, and in the method of transferring the motion of the hand-feed levers to the cutting-off slide and turret slide. The bed of the machine, the gutter for catching oil and the head-stock, are all one piece of casting. The steel spindle is hollow, and its

eil and the head-stock, are all one piece of casting. The steel spindle is hollow, and its journals are ground. The boxes are lined with Babbitt, so that no other metal touches the spindle, and may, by a special device, be re-Babbitted and bored exactly parallel with the planing of the bed. The cone is large, and carries an ample width of belt. A steel collar, J, Fig. 3, between the front end of the forward box and the spindles receives the thrust due to the cut, and a nut

end of the forward box and the spindles receives the thrust due to the cut, and a nut
on the spindle acts against the cone to adjust
it forward on a feather, K, in the spindle to
take up end wear. The wire or rod from
which the work is to be made is passed
through the spindle and collar on the stand,
and is held by a thumb-screw in the collar,
which is influenced by the weight and cords,
so that when the wire is released in the
chuck the weight pulls the collar and wire
forward, forcing the wire out through the
front end of the chuck until it comes against
the stop in the turret, which gauges the
length needed to make the piece required.

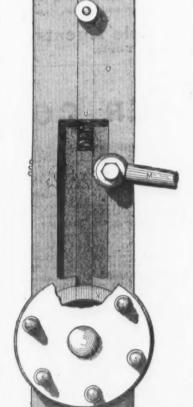


Fig. 7.—Operating Mechanism of the Turret.

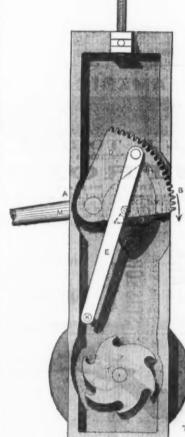


Fig. 8 .- View of the Lower Side of the Slide, showing the Parts which Revolve the Turret.

or adjusted position on the bed by the screw S and gib shown by dotted lines across P. Fig. 7 represents a disk located just below the turret, which is perforated with 6 holes of such size and shape as to receive the end of the lock-bolt L. E is a lever, by means of which motion is conveyed from the segment D to the ratchet-wheel T.

Theography of the parts in the set have where

the ratchet-wheel T.

The corresponding parts in these three views are lettered the same, so that their connection may be easily traced by an inspection of the cuts. By the backward movement of the handle M the turret is drawn back from the work and at the same time is revolved one-sixth of its circumference, and is returned argin to its formary position by the turned again to its former position by forward movement of the same handle. machinery which revolves the turret by this

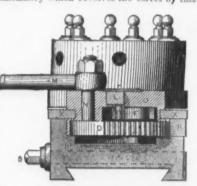


Fig. q.-Sectional View through the Slide taken at A B of Fig. 8.

motion of the handle is herein shown and may be described as follows: The slide O in the three views is a solid casting, and has on its under side a cavity to receive the segment its under side a cavity to receive the segment D, as will appear in Fig. 9. The central portion of the slide is further recessed to receive the cam F, shown in all the views. The segment D is connected with the handle M by the pin N, and is put in motion by the same. Upon the handle being moved backward the segment begins its motion forward, as indicated by the arrow in Fig. 8, thereby moving the slide backward upon the gibs by the working of its cogs into the rack R (Fig. 9), which is attached to the base P. When the segment D has accomplished about one-half which is attached to the base P. When the segment D has accomplished about one-half its motion the pin H, which is on the upper side of the segment D, comes in contact with the projection or lug on the side of the cam F, as shown by the arrow head in Fig. 3,

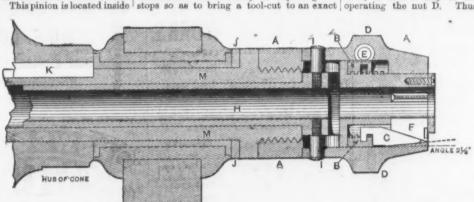


Fig. 3.-Section of Front Bearing and Chuck.

the turret slide, and has a solid stem with a coutside diameter, because it is almost impos- wrench is obviated, and the adjustment is spered end projecting above the top of the sible to lock the adjustment nuts on the stop more readily effected. The parts are designarret slide. The hand-lever has a tapered screw without repeated trials to find the cornated by the same letters in the several

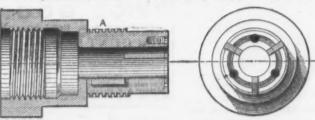


Fig. 4.—Detail of Chuck.

lastened in its adjusted position by tightening the nut. This is a very advantageous feature, the nut. This is a very advantageous feature, the nut. This is a very advantageous feature, the screwed end is tapped into the sliding and the screwed end is tapped into the sliding the cluck and grip the rod or wire, while the chuck and grip the rod or wire, while the chuck and grip the rod or wire, while the chuck and grip the rod or wire, while the chuck and grip the rod or wire, while the chuck and grip the rod or wire, while the chuck and grip the rod or wire, while the wire may be held so that its projecting the wire may be twisted off without slipping the loose collar B there' is a short, stiff spiral spiral spiral, and C is guided at the end by B, and since last the ping the proposition of motion between the hand-lever of the came of the chuck and grip the rod or wire, while its motion to the right causes C, and therefore F, to recede from the chuck axis and to release the wire. Since B is screwed upon A, which is a shown; by means of the fast and loose collars, the spring and the screwed in the unit of the projection of motion between the hand-lever of the came of the chuck and grip the rod or wire, while its motion to the right causes C, and therefore F, to recede from the chuck axis and to release the wire. Since B is screwed upon A, with the spring the wire may be twisted off without slipping the projection of motion between the hand-lever of the came of the chuck axis and to the wire may be twisted off without slipping the wire may be twisted off without slipping the opposite side of the came of the chuck axis and to the chuck axis and to release the wire. Since B is screwed upon A, wire within the jaws or impairing the jaw against the pin G, therefore F, to recede from the chuck axis and to the chuck axis and to release the wire. Since B is screwed upon A, wire within the jaws or impairing the jaw against the pin G, therefore F, to approach the axis of the chuck and grip the rod or wire, while its motion

the first slide. The hand-lever has a tapered serve to suitible end of the spindle, and is served by a nut. By slacking this nut the hand-lever may be moved to any desired position, to suit the requirements, and securely stion, to suit the requirements, and securely side of the hearing, while H may be operated. side of the bearing, while H may be operated endwise within M by means of the hand-lever shown on the left hand of the head-stock in the general view. The core A of the chuck screws upon M, and is threaded to receive the adjustment nut B, which receives and the adjustment but B, which receives and holds the adjustment wedges C at their ends by the talon shown. The shell D is secured to H by the screws I, which pass through slots in A, and therefore move endwise when H is operated by its hand-lever. Now the mouth of D, against which the adjustment wedges C rest, is cone 2½°, as marked; hence the end motion of D to the left causes C, and therefore F, to approach the axis of

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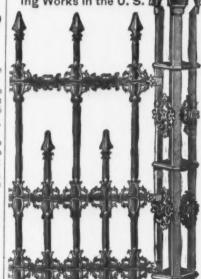
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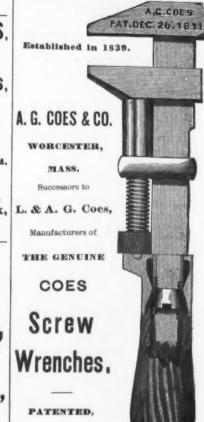


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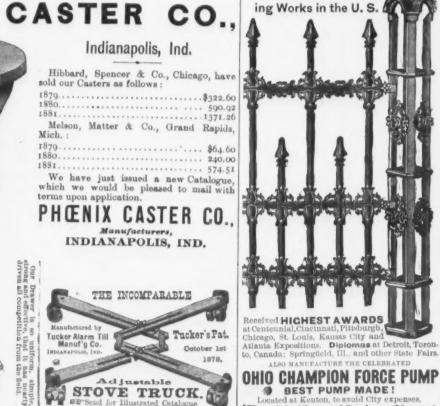
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seat in the disk V. This operation is completed before the motion of the segment brings the pin K in contact with the ratchet-wheel T. The segment in continuing its motion after the pin K is brought into the notch S, begins the revolution of the turret on its axis. As will be seen by the inspection of axis. As will be seen by the inspection of a much longer feet radius, which belonged to the Napier radius than the projection upon the cam with which it comes in contact, and therefore, after a given part of its motion is complete, gets beyond the reach of the cam, thereby releasing its hold and allowing the bolt L, Fig. 7, to be forced against the disk V by the Fig. 7, to be forced against the disk v by the expansion of the spring U, which occurs soon after the turret has commenced its revolution by the contact of pin K with the wheel T. The completion of the movement of the handle M (and the segment D) completes the revolu-M (and the segment D) completes the revolu-tion of the turret one-sixth of its circumfer-ence, thereby allowing the bolt L, by the further expansion of the spring U, to be forced into its next opening or seat in the disk V. The forward motion of the handle M brings the turret forward to its position at the work and restores the parts to their for-mer positions, as shown in the illustrations. mer positions, as shown in the illustrations. The adjustment of the tool hight is effected by the threaded rings V and W, shown in Fig. 2. Small shelves are attached to the sides of the bed to hold tools, and a rack and pinion movement is employed in the cut-off slide, as well as on the turnet slide. slide, as well as on the turret slide. A new, simple, powerful and durable friction clutch is employed upon the counter-shaft, which is easily and silently reversed.

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Graduation.

Some general account of this subject, atbe some general account of this subject, attention to which is directed at the present time by a controversy now in progress in our correspondence department, cannot fail to be of interest. Accordingly, we commence at this time the publication of a few short articles bearing upon it historically, as well as from a scientific standpoint There will be found very little that is new in these articles, their very nature making that quite impossible, but we hope a new dress on ld matter, much of which is gleaned from sources not generally accessible, will make it entertaining.
Graduation is the name given to the art of

dividing straight scales, circular arcs, or whole circumferences into any required num-ber of parts. It is the most important and difficult part of the work of the mathemati-cal instrument maker, and is required in the construction of most physical, astronomical nautical and surveying instruments, such as thermometer scales, linear measuring instruments, quadrants, sextants, mural circles, theodolites, &c.

theodolites, &c.

The art was, undoubtedly, first practiced by clockmakers for cutting the teeth of their wheels at regular intervals; but, so long as it was confined to them, no particular delicacy or accurate nicety in its performance was required. This only arose when astronous began to be seriously studied and the exact position of the heavenly bodies to be determined, which created the necessity for strictly accurate means of measuring linear and angular magnitude. Then graduation and angular magnitude. Their graduation began to be looked upon as an art which re-quired special talents and training, and hence we find that all the best astronomers have spent their best efforts on the perfecting of astronomical instruments. Of these may be named Sharp, Bird, Smeaton, Ramsden, the Duc de Chaulnes, John and Edward Troughton, Simms, and Ross.

It is obvious that the first graduated instru ment must have been done by the hand and whether it was in the form of a straight edge with equal divisions, or a screw, or a divided plate; but once in the possession of one such divided instrument, it was a comparatively easy matter to employ it as a standard and copy its divisions on any other article that might be desired. Hence gradunaturally divides itself into two ation naturally divides itself into two distinct branches, original graduation and copying, which latter may be done either by the hand or by a machine called a dividing engine. We may thus speak of graduation under the three heads of original graduation, copying, and machine graduation.

Original graduation is by far the most different particular and control of the control of t

ficult part of the art, so difficult, indeed, and requiring such accuracy of hand and eye that but few in a generation have been completely competent for the task. The earlier astronomers graduated their own instruments, and, from the examples that have come down to us, it must have been very roughly done as compared with modern

render the method untrustworthy. This method, which employs the common diagonal scale, was used in dividing a quadrant of 3 feet radius, which belonged to the Napier of

the case, the distance between the marks is carefully bisected by the hand, with the aid of a magnifying glass. The same process is again applied to the halves thus obtained, and so on in succession, dividing the line into parts represented by 2, 4, 8, 16, &c., till the desired divisions are reached. In the method of stepping, the smallest division required is first taken, as accurately as possible, by spring dividers, and that distance is then laid

the dots were drawn in the way already mentioned.

The next eminent artists in original gradoff by successive steps from one end of the line. It is evident that in this method any line. It is evident that in this method any error at starting will be multiplied at each division by the number of that division. Errors so made are easily adjusted by the dots being put either back or forward a little, by means of the dividing punch, guided by a magnifying glass. This is an extremely tedious process, as the dots, when so altered several times, are not to get insufferably.

means theoretically of dividing a straight tion, aided by chords taken from an exact line into any number of equal parts; but the scale of equal parts which could read to .001 practical carrying out of the geometrical of an inch, and which he had previously construction is so beset with difficulties as to graduated by continual bisections. With the beam compass an arc of radius 95.938 inches was first drawn. From this radius the chords of 30°, 15°, 10° 20′, 4° 40′ and 42° 40′ were computed, and each of them, by means of Merchiston and which only read to minutes—
a result, say Thomson and Tait (Nat. Phil.),
"giving no greater accuracy than is now attainable by the pocket sextants of Troughton and Simms, the radius of whose arc is little more than an inch."

The original graduation of a straight line is, in practice, done either by the method of continual hisection or by stepping. In constitution of the sade of equal parts, laid off on a separate beam compass to be ready. The radius laid off from of gave the point 60°; by the chord of 30° the arc of 60° was bisected; from the point 30°; the chord of 15° laid off gave the point 90°; the chord of 15° laid off backward from 90° gave the point 75°; from 75° was laid off forward the chord of 10° 20°, and from 90° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° 20°, and 10° was laid off backward the chord of 10° was laid off backward was laid off backward the chord of 10° was laid off backward was laid were found to coincide on the such divisions of \$5 \cdot 20'. Now \$5^\cdot 20' being = 5' \times 1024 (Charles Parsons, "Charles Parsons,

uation are the brothers John and Edward Troughton. The former was the first to deroughton. The former was the first of devise a means of graduating the quadrant by continual bisection, without the aid of such a scale of equal parts as was used by Bird. His method was as follows: The radius of the quadrant laid off from o gave the point 60°. This are bisected and the half laid off from magnifying glass. This is an extremely this arc bisected and the half laid of from the division of circular arcs is essentially the same in principle as the graduation of the point so. The arc between 60° and the half laid of from the pleasantly at the card tables or in the bould and possible the point so. The arc between 60° and 90° bisected gave the point so. The arc

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F. Libby, Norwalk Lock Co. enry Hoffmann, "K. Kennedy, Branford Lock Co. E. F. Jones. L. Runyon, "L. Runyon, Wheeler & Co. W. H. King.

meeting. It was decided, almost without discussion, and certainly without dissent, that the conditions of business not only warranted but demanded a firm maintenance of prices, and the existing list was unanimously

After the adjournment of the association, to meet a month hence at the Profile House, White Mountains, the company passed the time pleasantly at the card tables or in the

M. J. Woodruff, Russell & Erwin Mfg. are entertained in many parts of the counas to the value and character of the extry as to the value and character of the exhibition will undoubtedly be fully realized. Both time and place fixed upon are well chosen for an undertaking of this kind, Denver being one of the largest cities of the plains, the most accessible of all in the State of Colorado, and the center of mining information and negotiations. Ample opportunity will be offered for the examination, in collective shape, of the wealth which has been discovered in the past few years, and all possible measures will be taken to impar all possible measures will be taken to impar interesting information in regard to the exhibits. Round trip tickets are to be sold from any point to Denver and return, in-cluding admission to the Exposition grounds, and the many valuable hints to be derived by visitors, combined with the pleasures of by visitors, combined with the pleasures of journeying through the mountains, will not fail to be appreciated. The Exposition building is a substantial structure, 500 feet long and 310 feet wide, and will contain, in addition to mineralogical specimens, all kinds of machinery and manufactures. The enterprise is headed by the most substantial and successful husiness men of Colorada. successful business men of Colorado and bids fair to become, what it is intended to be, a national exposition whose yearly re-currence will be earnestly looked forward to throughout the entire country.

Nickel in Oregon.

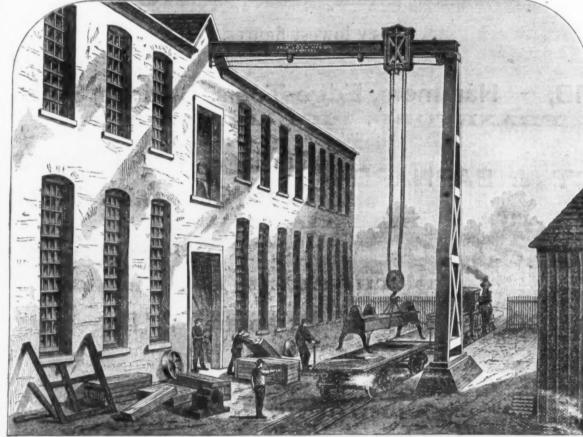
At a recent meeting of the San Francisco Microscopic Society, the first public and re-liable notice was made of the discovery of a large deposit of a rare form of nickel ore liable notice was made of the discovery of a large deposit of a rare form of nickel ore in Southern Oregon. The deposit is said to closely resemble that discovered in New Caledonia in 1864. According to a paper read before the University of Sydney by Professor Liversidge, these nickel minerals consist of two hydrated silicates of nickel and magnesia, which are found in small veins and fissures of serpentine occurring at Mont D'or, New Caledonia. They are found with chrome properties of the pro ring in serpentine, and are seen dissemi-nated through the loose blocks and boulders of that rock scattered over the surface of the ground. Dr. Hood has given the follow-ing analyses of the Oregon and New Cale-donia nickel ores:

	Oregon Ore A.	Oregon Ore B.	Garnierite.	Noumeite.
lica on & alumina oxide ickel oxide agnesia. ater	48.21 1.38 23.88 19.90 6.63	40.35 1.33 29.60 21.70 7.00	47.23 1.66 24.01 21.66 5.20	47 93 3.00 24.00 12.51 12.73
	Amorphous-Hardness. 2.5; Specific gravity, 2.45; color, pale apple green, becoming lighter by exposure. Adheres to tongue; not unctuous. Does not fall to pieces when placed in water.	Amorphous - Hardness, 2.0-2.5; Specific gravity, 2.0: color, da k apple green, becoming lighter by exposure. Atheres to tongue; unctuous, Falls to prove in water.	Adhe vater	Amorphous-Hardness, 2.5; specific gravity, 2.58; color, dark apple green. Does not adhere to tongue; unctuous. Does not fall to pieces in water.

The peculiarity of this deposit of nickel will undoubtedly be of considerable interest to mining engineers, and it is probable that works will be crected for its reduction at no distant time.

The Glass Industry of Pittsburgh, The 75 glass factories of Pittsburgh and

ricinity, 24 of which are devoted to the nanufacture of window glass, 8 to flint bottles, 10 exclusively engaged in the manufac-ture of green glass bottles and 0 in the pro-duction of chimneys, [amply illustrate the manufactue ing enterprise of this great Western industrial center. The factories are owned by 59 firms. The capital invested in them amounts to \$5,985,000, the number of hands employed is 6442 and the value of the product in 1881 was \$6,832,683. The growth of the glass chimney factories is very rapid, and may be traced directly to the development of petroleum in Pennsylvania. They furnish employment to 830 hands, and their extent is well exemplified by the following items of consumption: The material annually employed amounts to 350 tons of pearl ash, 500 tons of lead, 640 tons of soda ash and 3640 tons of sand. The greater number, ash, 500 tons of lead, 040 tons of soda asn and 3640 tons of sand. The greater number, in fact most all of the flint glass chimneys in the country, and very nearly 80 per cent. of all the other kinds of glass chimneys are made in Pittsburgh, the aggregate number surned out in a year exceeding 40,000. The factories devoted to the manufacture of the finer and more elegant products, such as crystal glass, give employment to about 1850 men, and consume annually 3300 tons of soda ash, 800 tons of nitrate of soda and 13,000 tons of sand. The articles turned out these factories are not surpassed in looks, design or beauty by any other establishments of the kind within the United States. extent of the window-glass trade of Pittsburgh may be readily imagined when it is stated that the product of one year required 720,000 packages or boxes, each of which contained 50 feet of glass, and a quarter of a million of houses are furnished every year with the Pittsburgh manufacture. The product of the bottle factories in a single year amounted to upward of 510,000 gressor, 73,-440,000 vials or bottles. Fifty-nine establish-ments are enumerated manufacturing window glass, flint or lime glass, green or bottle class and pressed ware. Further comment on glass and pressed ware. Further commercial this subject is perhaps unnecessary, figures given above amply illustrating the extent and growth of this most important industry, which among the different cities of the United States is so well represented in



New Power Stationary Bridge Crane, Built by the Yale Lock Manufacturing Company, Stamford, Conn.

some examples. The first example of note is point 85, while the arc between 85 and the 8-foot mural circle which was graduated by Graham for the National Observatory in 1725. In this, two eccentric arcs, of radii 96.85 the arc between 85 and 85, 25. Lastly, and 95.8 inches respectively, were first dequesected and four-fifths taken beyond 85, and 25.8 inches respectively, were first dequesected and four-fifths taken beyond 85, and 86, 25. 1725. In this, two eccentric arcs, of radii 96.85 and 95.8 inches respectively, were first described by the beam compass. On the inner of these the arc of 90' was to be divided into degrees and twelfth parts of a degree, while the same on the outer was to be divided into 96 equal parts and these again into sixteenth parts. The reason for adopting the latter was that 96 and 16 being both powers of 2, the divisions could be got by continual bisection alone, which in Graham's opinion, who first employed it, is the only accurate method, and would thus serve as a check upon the accuracy of the divisions of the outer arc. • With the same distance on the beam compass as was used to describe the inner arc. laid off With the points o° and 60° as centers successively, and a distance on the beam compassivery nearly bisecting the arc of 60°, two slight marks were made on the arc : the dis tance between these marks was carefully di-vided by the hand, aided by a lens, and this gave the point 30°. The chord of 60° laid off from the point 30° gave the point 90°, and the quadrant was now divided into three equal parts. Each of these parts was simi-larly bisected, and the resulting dimensions again trisected, giving 18 parts of 5° each. Each of these quinquesected gave degrees, the twelfth parts of which were arrived at by bisecting and trisecting as before. The outer arc was divided by continual bisection alone, and a table was constructed by which the readings of the one arc could be converted into those of the other. After the dots indicating the required divisions were obtained, either straight strokes all directed toward the center were drawn through them by the dividing knife, or sometimes small arcs were drawn through them by the beam compass, having its fixed point somewhere on the line which was a tangent to the quadrantal arc, at a point where a division was to be

The next important example of graduation oughly done as compared with modern was done by Bird in 1767. His quadrant, which was also 8 feet radius, was divided into degrees and twelfth parts of a degree. Cales, we have by elementary geometry the

traight lines, and of this we shall now give | thirds of it taken beyond 82° 30', gave the | "abundance of the sea," and for inland gave 85° 20°, which, as before, is = 5×2^{10} , and so can be finally divided by continual bisection .- Mechanics, July 29.

The Lock Makers in Council.

The United Association of Lock Manufac urers combined business with pleasure on Thursday last, in a way which all who had the good fortune to participate will have cause to remember with pleasure. At the invitation of the Norwich Lock Co., the July meeting was held at Kitemaug, a beautiful promon tory on the Thames River, about midway be en Norwich and New London. This place has been improved by the Kitemaug Association, a club of Norwich citizens and business men, incorporated in 1879. In this associa-tion no member can hold more than one share of stock, the par value of which is \$100, and only 150 shares can be issued ander the present rules. The name of the promontory, Kitemang, means place of crossing. The Mohegans and Pequots formerly upied opposite sides of the river, and as this is the narrowest point for some miles, it was the natural point of intercommuni-cation between the tribes. Remnants of these tribes still live in the neighborhood. The improvements at Kitemaug consists of a station on the railroad, an eighth of a mile back from the river, a pleasant club house on the top of the hill and a kitchen and dining room near the water. No liquors are purchased or dispensed by the club, members who entertain their friends are at liberty to do so in their own way The place is in all respects delightful, and is greatly enjoyed by the members. Mr H. H. Osgood, mayor of Norwich, is president; Mr. F. L. Gardner, vice-presiden and Mr. Chas. E. Dyer, secretary treasurer. Mr. Sidney Turner and Chas. H. Beebe, of the Norwich Lock secretary

members and guests was a surprise and de-light. Fish and clam chowder led, followed by baked blue fish, fritters and soft shell crabs; then came lobsters cooked in various ways, followed by bushels of clams, which were perfectly cooked and were to the steamwere perfectly cooked and were to the steam-heated clams of Boston harbor and the "Co-hogs" of Coney Island, as good wine to bad water. Some score of bushels were quickly disposed of, and each man gradually disap-peared from the view of his neighbors be-hind a mountain of shells. It was an unequal contest, and when the clams had come up smiling for a last round, their assailants wer lying back in their chairs exhausted and beaten. Indian pudding, watermelon and coffee concluded the feast. With the cigars, Mr. Turner rapped for order and called some of the gentlemen present for appropriate remarks. Hon. David A. Welles made a very entertaining address, and read an unpublished poem by the late H. W. Longfellow, written for a clam bake, and probably his only venture in the line of humorally reads. H. Recomber was ous verse. Mr. Isaac H. Bromley made avery humorous speech, full of local reminiscences. As the time was short the speaking did not become general. In a few moments the Norwich boat came along and most of the party went aboard and were carried to that city, greatly enjoying the sail up the beautiful Thames. At Norwich the visitors were shown the many points of interest. It is a charming and interesting place—a city of comfortable houses and fine trees. About 8 of combination induses and the residence of Mr. Sidney Turner, whence they were conveyed to the boat train, leaving Norwich at 9.17 p. m. Every incident of the day had been delightful, and the Kitemaug meeting was voted a success.

The Denver Exposition .- The first an nual National Mining and Industrial Exposition, which is to be held at Denver, commencing August 1st, promises to be one of the most interesting and important that has been held in the country since 1876. A complete collection of the various minerals, Chas. H. Beebe, of the Norwich Location, were pany, members of the association, were hosts of the day. The following lock men probably form one of the principal features the United States, and the high expectations which Pittsburgh. TO

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A New Direct Process.

The following translation of a report by The following translation of a report by Professor Särnströn, on experiments made on dephosphorization in a charcoal furnace at Nyhammar, on the Vesterbergsladen, one of the largest iron deposits in Sweden, is given in Iron:

As is well known, bar iron was in earlier times produced from the ores by smelting with charcoal in small stoves or furnaces, and although the ores then used contained a considerable amount of phosphorus, this circumstance did not affect the mechanical properties of the metal, as most of the phosphorus, was absorbed by the state of the phosphorus was absorbed by the phosphorus was absorbed by the state of the phosphorus was absorbed by the state of the phosphorus was absorbed by the phosphorus properties of the metal, as most of the phosphorus was absorbed by this process in the slag. This process has been termed, by the Swedes, Osmund, and, by the Spaniards, Catalan smelting. Although excellent iron was produced by this method, it has, of course, given way to the blast and puddling furnaces. The reason of this is that in the last successful process in certain respects an old Swedish furnaces (in certain respects an old Swedish furnaces (in certain respects an improvement on the Spanish) the process was intermittent; it was necessary to heat and reheat them for any small quantity of iron charged, and to blow out and refill the iron charged, and to blow out and reint the shaft each time. It is evident that in this way a great deal of fuel was wasted, while but a very small quantity of iron was produced; and it may be supposed that the desire to improve the method gradually led to the now existing mode of making pig-iron, which was constitutions process in atturally which, as a continuous process, naturally produces a larger quantity of metal, while a considerably smaller quantity of fuel is consumed. In the blast-furnace it became, however, necessary to make use of ores containever, necessary to make use of ores containing only a small quantity of phosphorus, and thus "mountain" or magnetic ores which contained percentages were objectionable.

There is still, however, in certain parts of America a method in use by which ores con-

taining a considerable quantity of phosphorus can be utilized. This method has been called "metal forging;" but as it is also intermittent, and takes place in open furnaces, it neither properly utilizes the fuel nor returns neither properly utilizes the fuel nor returns an equivalent percentage of iron, and has in consequence been found very costly, and therefore is in use only under exceptional circumstances. It is clear that, if the process of conversion takes place in a shaft, as in a blast furnace, without the temperature be-coming so great as to effect any coalescence coming so great as to effect any confescence or complete smelting, and the mass is, at this stage, transferred in a convenient man-ner to a hearth where the further process of fusing the iron particles can take place, the process will at once become continuous and process will at once become continuous and direct, and has the advantages of saving fuel and removing any impurities in the bloom at the same time. The furnace, during this operation, can be kept closed, so that reduction by the hot carbonic oxide proceeds continuously. The furnace at Nyhammar consists of a reduction shaft connected with the hearths to work of the context of the sists of a reduction shaft connected with the hearths by small culverts. These hearths can be closed, having vertical dampers with holes at their lower part, in order that the gases generated by the fuel may pass through the shaft and thus act the part of gas in an ordinary blast furnace. The dampers are balanced, and are therefore easily raised and lowered, the culverts being also furnished with single bricks, by removing which the necessary repairs to the furnace can be done, but which, pairs to the furnace can be done, but which, at other times, close the furnace. Should it be desired to cut off the shaft from the rebe desired to cut off the shaft from the remainder of the furnace, this can be done by a horizontal damper, which can be drawn closely over the hole. The operation of the furnace is as follows: Charcoal and ore are charged in the shaft in proper proportions, either by a special apparatus or in the common way. The ore will then, as it settles in the shaft, be subjected to the same process of conversion as in the ordinary reductionzone of a blast furnace. In order to transfer the spongy iron to another hearth, a hook fer the spongy iron to another hearth, a hook is passed through the upper working holes in the dampers of the culvert through which the operation of raking down is effected in order to keep the hearth always well filled with charcoal and iron until the smelting is nearly effected; but when it is desired to re-move the mass of iron, the raking down is stopped, and the bloom allowed to go down in the nearth. It may then be easily broken up when one of the dampers is opened. Dur-ing this operation one fire-place should be kept charged, as the gas pressure in the fur-nace should always be higher than the pres-sure of air from without, in order to prevent all suction of air through the open hearth. As soon as the bloom is removed and the hearth cleaned out, it is again closed and re-filled with charcoal and iron, by raking down from the shaft as before, and the blast turned on. In the same way, the process may be alternated with the other hearths. The fursisted of a reduction shaft, 16 feet high, with a cubic diameter of 16 feet above and 18 befive shifts were: made of fire-bricks, and was 11/2 feet it contained 302.4 cubic feet charc With this was connected a hearth, the dimensions of which varied, as they were al-tered considerably during the progress of these experiments. The fittings were made these experiments. The fittings were made of bar iron, and were very similar to those used in the Lancashire hearths. The dimensions were as follows: Distance between upper rim of tuyeres, 2 feet; but in order to facilitate the extraction of the bloom, they back, which was perpendicular, to the front wall, the distance was 2 feet, with 3 inches sumption being therefore 2.07 barrels. slope outward; but this distance may, per-

apped in precisely the same manner as in a Lancashire furnace. No particular work in the hearth was required, but when the tuyeres could not be kept free during the settling, it was found necessary to insert a bar carefully through one of the front dampers in order to ease the mass. This was, however, avoided as much as possible, as the coalescence of the materials was greatly accelerated by any stirring in the hearth, and caused great loss of iron in some instances. The smelting was also imperfectly effected, the bloom being irregular and covered with a slaggy coating This was particularly the case when the ac tion of the furnace was defective, owing to the choking of the tuyeres by unreduced ores &c. When the mass commenced to fill the hearth, the slag became more heavy and por-ous, and poorer in iron; the raking down then ceased. The blast was still continued until the hearth became sufficiently empty to allow the breaking out of the bloom without removing any fuel. Towards the finish some work was done in the hearth with the bar, partly to keep the charcoal over the tuyeres, and partly to fettle up the bloom. This was, however, effected after opening one of the side doors. An advantage which is very considerable as regards the practical utility of this furnace is the great ease with which the raking down is effected, as well as any other operation which may be required in the hearth while the blast is on. For in-stance, when the furnace becomes heated, the flame, which is forced through the holes when these are opened, is so "curt" and transparent that it is quite possible to stand at a distance of 4 to 5 feet from the hearth and look into the furnace while raking down charcoal and ores without any inconveni enarcoal and ores without any inconveni-ence. With a little practice, which an un-skilled laborer may acquire in a week's time, it is possible to charge and rake charcoal and ores uniformly down, an advantage of great importance, as it embodies a check

great importance, as it embodies a check whereby, to a certain extent, the action in the furnace may be kept perfectly even.

The furnace was tended by one man each shift, who, with the assistance of a boy, stored the ores and charcoal and also removed the slag and attended the "koltorn."

As the hearth during the process was closed, the flame could only issue from the working hole through which the furnace was tended; the heat was, therefore, small, and as the the heat was, therefore, small, and as the work consisted chiefly of raking down into the hearth, tapping the slag, and keeping the the hearth, tapping the siag, and keeping the furnace clean, it may be said that the actual labor of tending the furnace was comparatively simple, both as regards the labor involved and the skill required. It may be added anybody without experience in tending furnaces can be employed, and one may, there-fore, be entirely independent of the skilled workman, this circumstance being no incon siderable factor in the method. The shaft wa capable of holding from 22 to 23 charges of capane of notaing from 22 to 23 charges of two barrels charcoal each, viz., 290 cubic feet each smelting, and one smelting was generally effected during 24 hours. In most of the experiments two barrels—12.6 cubic of the experiments two barrels—12.6 cubic feet of charcoal to 3 cwt. of ore—were used, but toward the finish the quantity of ore was reduced to 2 cwt., i. e., to 1 cwt. per barrel of charcoal (6.3 cubic feet), and this proportion was found advantageous, both as regards ore and the quantity of fuel consumed, in proportion as the ores contain more or less phosphorus. It would, however, be better to keep the slag richer and more plentiful in iron by a greater charging of ore than otherwise, unless it should, of course, be preferred to make the process more basic. than otherwise, unless it should, of course, be preferred to make the process more basic by a flux of lime or alumina. If such should be the case, it may be pointed out that a flux of this kind would be more effective in effecting dephosphorization than a refining fur-nace, a result which is brought about by the ferrous oxide contained in the slag appear-

refrous oxide contained in the sing appearing to act on the phosphorus in the same manner as lime on sulphur.

The experiments above referred to were commenced in November, and continued till about the middle of December, and then resumed with few interruptions from January to March. The results arrived at during this period were, of course, variable, as the idea guiding these experiments was to find the guiding these experiments was to find the best relation between the hearths, their diameter, the number of the tuyeres, their size, inclination, pressure of the blast, &c. The results here given will, therefore, be only such which tend to show what might best be effected with such a furnace, the following being the particulars of the working during the last few weeks. The ores used were uncested iron ores from the Väfs polg mine in

are many word		of Yield or res. Iron wt. Cwt
day shift	241/2 2 241/2 2 25 2	11.40 12 11.60 6 4.00 12 10.65 18 10.80
	130% = 633 cubic ft.	88 48.45

As 12½ of these 100½ barrels were consumed in the fire-place, the actual quantity of fuel used for iron making was only 88 an inch, with a declivity of about 22, and their width at the nozzle 1/26 by 1/26 inch, with the upper sides semicircular.

nerally found somewhat coarse and crystalline, with a finer surface, however, under-neath and at the edges, which could no doubt be accounted for by the circumstance

that these parts had absorbed more carbon.
As a rule three hours were required t
smelt a mass of 3 to 4 cwt. It is, therefore
to be expected that the parts which were the ongest exposed to contact with the charcoal had absorbed the greatest percentage of car-bon, but with increased dimensions of the shaft a more thorough reduction, and there-fore an increased production would be ef-fected. The principal work of the furnace would also be to smelt the iron particles ef-fectually, and the mass would not remain so ong in the hearth, on one side exposed to carbon cementation, and on the other to the pposite effects of the slag and the blast, hus tending to make the bloom uneven. The effects of these are minimized in proportion. as less time is expended in the smelting, and a more homogeneous product may conse-quently be looked for. Owing to the depth of the hearth and the long time which was required for the settling, the bloom became required for the settling, the bloom became cooled underneath, which made it a work of some difficulty to extract the slag at the notch. This difficulty ought to be avoided, either by heating the mass before it is taken out, or by giving it an appropriate heating n a separate furnace before breaking it up. Should it be desired to obtain a thoroughly geneous product by means of a remelt mogeneous product by means of a remeit-g process, the Martin furnace may be suc-ssfully employed. In consequence of the mpactness and small carbon contents of e blooms, the process of refining in the Lancashire furnace was very slow. The loss was, therefore, in this case greater than would have been justified under any other

The total quantity of iron made was about oo cwt., from which the following analyses

											cent.
	from	Björnhytte	mine	B	,		٠	, ,			0.02
4.8	**	1.6	**								
8-6	6.6	Väfpolsgrui	van	mine							0.12
60	0.0	11		9.0							0.10
0.0	0.0	6.9		0.6							
44	9.6	66		0.6							
	3.6	99									

blooms which were not remelted. In crucible the Vafpols ore yielded 62.3 ent. of pig iron, with 1.32 per cent of phos-horus. Three analyses of the iron gave respectively 1.33, 1.48, 1.70 per cent. of phosphorus, equivalent therefore to 3.04, 3.37, 1.10 per cent. phosphoric acid. Under the tests made on the iron thus nanufactured, in order to ascertain its ten-

on, it did not show any tendency to redshortness or brittleness; and by the experi-ments made at the testing establishment at Liljeholmen on a rolled bar of this iron, 600 lines long and 48 lines in diameter, the limit of elasticity was shown to be = 48 lb. per square line, with a bearing strain = 81 lb. per square line, with an elongation of 20.8 per square line, with an elongation of 20.8 per cent., a result which, it must be admitted, is very satisfactory, and can compare well with the class of pig iron made by the Lancashire process. It was noticed in these experiments that the action in the hearth, and consequently the result, was in direct proportion to the temperature in the shaft. If the furnace was sufficiently heated, no hard lumps could be noticed chafing the rod when raking down, and chafing the rod when raking down, and the action was perfectly regular, the molds clear, and the formation of slag small; whereas, when this was not the case, the action became at once loss satisfactory in oportion as the temperature in the shaft As the temperature in a furnace can be lowered, not only by excessive charging, but also by an action which is either too quick or too slow, &c., the case was just the same in this instance, and the effect analogous, viz., the unreduced metal remains in the slag in the unreduced metal remains in the slag in the same proportion as the reducing capability of the furnace decreases; and as the iron in the hearth is not overcharged with carbon, besides appearing solid, no boiling could possibly arise from the influence of the iron-charged slag on the bloom; but this circumstance, in addition to the loss occasioned by unreduced iron being absorbed in the slag, should have caused further waste of metal. The question here, therefore, as with all furnaces, is to carefully observe that the all furnaces, is to carefully observe that the charges, their quantity and composition, as well as other circumstances directly affecting the action of the furnace, are all in accord with the object in view, although it may be the last few weeks. The ores used were unroasted iron ores from the Väfs pols mine in Gränges berget, a famous iron deposit in Sweden, and contained about 60 per cent. of iron, and 0.91 of phosphorus, which were charged with 1 cwt. of ore per barrel of charcoal, viz., I cwt. of ore to 6.3 cubic feet of charcoal. The results of the following of charcoal. The results of the following of charcoal. The results of the following of charcoal charging of the shaft has an injurious of charcoal charging of the shaft has an injurious of a pasty consistency, and is run into molds about the present method not affect the action of this furnace to the extent which is the case with an ordinary last the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for repairing the furnace, tapping, heating up and charging. The time required for filling the ingot molds is from 12 to 12 minutes are required for repairing the furnace, tapping, heating up and charging. The time required for filling the ingot molds is from 12 to 12 minutes are required for repairing the furnace, tapping, heating up and charging. The time required for filling the ingot molds is from 12 to 12 minutes. The pairing the furnace, tapping, heating up and charging the furnace from the same causes. At the same time it seems from the pairing the furnace, tapping, heating up and cha also made at Löderfors with the same method. The shaft was in this case 16 feet high, and capable of containing ten charges

The "Foreign Abstracts of the Institution of Civil Engineers," England, contain an interesting article on the Alexandrowsky Steel Works, near St. Petersburg, Russia, translated from the Jernkontorets Annaler. The works were commenced at the end of 877, set to work in March, 1879, and since that time have been in continuous operation.
The products are steel rails for the government lines, and projectiles and guns of cast steel, these latter being made according to the Terre-Noire process. The plant com-prises seven melting and six preparatory heating furnaces on the Siemens-Martin principle, which are arranged in a single line about 350 feet long; the heating and melt-ing furnaces alternate with each other. Six of the me.ting furnaces are of seven tons capacity, while the seventh takes a nine-ton charge. The latter is a little over 3 feet larger than the smaller ones, and has two openings instead of only one on the working side. The gas producers are placed in a line parallel to the furnaces, there being four to n melting and three to a heating furnace and each pair of furnaces has its own chim ney. The capacity of the four regenerator chambers under each melting furnace is 1539 cubic feet, and as the consumption of coal is about nine tons daily per furnace, the per cent. capacity per ton of coal per day is about 170 per cent. cubic feet. The hearth bottom of the meltimolds, o. cubic feet. The hearth bottom of the melting furnaces, which are carried upon 2-inch cast-iron plates, are made of a lower layer of Dinas bricks 2½ inches, covered by 7 inches of a mass formed of 42.5 per cent. of clean sand from Lake Ladoga, 42.5 per cent. of burnt quartz and 15 per cent. of Russian fire-clay; the sides and roof are of Dinas bricks. The greater working life of the pricks. of burnt quartz and 15 per cent. of Russian fire-clay; the sides and roof are of Dinas bricks. The average working life of the furnace is 232 charges, the highest attained being 280. The roof requires partial renewal after about 150 charges. About 10 days are required for the complete renewal of the hearth and walls of the furnace. The ingot molds are carried on a turn-table, so that each one may be brought in succes under the tap-hole of the furnace, no ladle being used. They are lifted and removed by a transportable steam-crane running on a line of railway parallel to the longitudinal axis of the furna The materials chiefly used up to 1881 were

English hematite pig, averaging 3 per cent. of carbon, 1.9 per cent. of silicon, .035 per cent. of sulphur, and .078 per cent. of phose cent. of sulphur, and .078 per cent. of phosphorus; good Bessemer scrap from England and France; broken rails and other scrap produced in the works; worn out rails from Russian railways, with about 3 per cent. of phosphorus; Swedish spiegel from Schisshyttar, with from 3 to 15 per cent. of manganese; ferro-manganese from Terre-Noire, with from 60 to 80 per cent. of manganese; silica force-manganese from Terre-Noire. silica ferro-manganese from Terre-Noire, with from 4 to 10 per cent. of silicon, and rich pure iron ore from Sweden: Good English coal is used in the producers.

Pig ii	on										. ,			a		 					
Steel	sera rails man	D.																			
LOB	ralls.				. ,										. ,						
rerre	man	23	D	(A)	96																

The finished rails contained 0.15-0.20 per ent. of phosphorus, carbon 0.25 per cent., and manganese 0.45 per cent. As rails of this composition would not stand the extreme cold of the Russian winter, the proportion of iron rails and pig metal was reduced, that of steel scrap being correspondingly increased, having per charge:

Pig iron		000
Steel scrap	 	(
Iron rails		1
Spiegeleisen		
Ferromanganese.		
		-

giving a product with 0.08-0.10 per cent. of phosphorus, 0.3-0.4 per cent. of carbon, 0.8-0.9 per cent. of manganese, and only traces of silicon. At present the average amount of pig used is about 20 per cent. The details of eight successive charges, both in the larger and smaller furnaces, are set forth in tabular form by the nutber a tabular form by the author.

In the smaller furnace the average time of

The ore reduction process was tried ex-perimentally with charges containing 36 per cent, of pig metal, and 8 per cent, of a somemethod. The shaft was in this case 16 feet high, and capable of containing ten charges of two barrels, viz., 12.6 cubic feet, each, about half the quantity, therefore, of the one erected at Nyhammar. The manufacture here was 16 cwt. pig-iron per shift, with a consumption of 25.2 cubic feet charcoal per cwt. pig, and about ½ cwt. ore per barrel charcoal = 6.2 cubic feet. By the ext. from its law species was 15 cwt. pig. here was 10 cwt. Pts cubic feet charcoal per consumption of 25.2 cubic feet charcoal per cwt. pig, and about ½ cwt. ore per barrel charcoal = 6.3 cubic feet. By the experiences thus gained in this method, it seems—while, of course, pointing out the improvements and alterations which might up by the slag, which consequently became the effected for its simplification—that it sharmal that the property of the consequently became the effected for its simplification—that it sharmal the consequently became the effected for its simplification—that it sharmal the consequently became the effected for its simplification—that it sharmal the consequently became the effected for its simplification—that it sharmal the consequently became the consequently improvements and alterations which might be effected for its simplification—that it would be of practical utility as a charcoal process for the direct conversion of ores containing an unusually large amount of phosphorus.

It is to be regretted that the ore found it is to be regretted that the ore found in the containing an unusually large amount of phosphorus. the hearth was I foot, and the molds inserted of iron were thus \$5.05 per cent. It ought, an inch, with a declivity of about \$2^{\circ}, and however, to be stated that the bloom removed that the homour phores, as only one furnace was erected, it became necessary to have a moldified and home the hearth when the bloom has a per moved. In order not to obtain any metal before the tuyeres until the furnace was removed. In order not to obtain any metal before the tuyeres until the furnace with home when the bloom has been removed. The front damper was then closed and chardal hearth became nearly filled; the blast had been opened, it was they the fear the blast had been opened, it was also a good opportance in the form of the provided and or examining the fracture, which was also a good opportance the hearth when the blast had been opened, it was a subsequently broken under the results gase the provided and or examining the fracture, which was also a good opportance the blast had been opened, it was a subsequently broken under the results gase and in the district of Vesterbergsladen, unded in the coats of various double and the district of Vesterbergsladen, unded the district of Vesterbergsladen, unded the district of Vesterbergsladen, unded in the district of Vesterbergsladen, unded state of the district of Vesterbergsladen, under the district of Vesterbergsladen, under the district of Vesterbergsladen, under the depart of the district of Vesterbergsladen, under the depart of the

of iron and partly of magnetic iron of volcanic origin, the gangue being quartz and apatite.

The Alexandrowsky Steel Works, Russia.

Russia.

To be described by leading it with 17.25 tons midway between bearings 3.2 feet apart. The load must be carried for five minutes without producing a deflection greater than 1.2 inch, or a permanent set of more than 1.08 inch. The other two parts of the same rail are cooled in a mixture of iron and salt to 18° C., when they must resist, without breaking, two blows from a weight of somewhat ever 1000 pounds, falling 8 feet, the rails resting on supports about 3 feet apart. If three out of the nine samples fail in these

If three out of the nine samples fail in these tests, the whole batch is rejected.

The charges for projectiles consist of about 67 per cent. of Bessemer and other steed scraps, 5.4 per cent. of pig iron, 11.4 per cent. of spiegel and ferromanganese, and 9.1 per cent. of silicon manganese alloy. The metal is cast in chills and the projectiles are oil-tempered, about 20 per cent. being broken in the process. Latterly the increased customs duty has prevented the use of good foreign scrap and pig iron, and an attempt foreign scrap and pig iron, and an attempt has been made to adopt the basic process for inferior material. The following changes

Inom una																			E.	6.	K	- 5	cent.
Iron ore				٠											٠								0.7
Lime																							6.7
Cleveland	ï	rig																					25.0
Old ingot	m	Ol.	d	9																			4.5
Scrap																							44.5
Hematite	D	ig																					6.1
Spiegel						,						,											5.4
Ferro-ma	ng	EB.	n	e	8	e																	0.4

The iron ore was a quartzose specular iron from Stripa, in Sweden, containing about 43 per cent. The Cleveland pig contained 1.62 per cent. of phosphorus; the broken ingot molds, 0.7; and the scrap, 0.3 per cent. The furnace bottom was covered with a mixture of dolomite and coal tar, which burns to a very hard mass. About two-thirds of the line and iron ore were first charged with the very hard mass. About two-thirds of the lime and iron ore were first charged with the pig iron and a part of the scrap; the remainder of the former and the latter followed at short intervals. When a test of the metal, after hammering and cooling in water, can be bent double without breaking, the hematite pig is added, and when it is completely incorporated, and a fresh test is capable of bearing from five to eight blows of a 20-pound sledge, the spiegel and ferro-manganese are added. Care must be taken before pound stedge, the spiegel and rerro-mangan-ese are added. Care must be taken before each addition to the charge to remove the highly phosphuretted slag. The finished in-gots contain only 0.06 per cent. of phos-

SCIENTIFIC AND TECHNICAL.

A NEW WATER METER.

A new apparatus for measuring the con-sumption of water has recently been intro-duced, and consists of two cast-iron cylinsumption of water has recently been introduced, and consists of two cast-iron cylinders inclined to each other at an angle of
about 20°. These cylinders are supported
on a pivot, and are free to rock from side to
side as the weight of water in the one or the
other causes it to move. The cylinders are
connected with each other at the bottom,
and are partly filled with mercury. Inlets
and outlets for water are controlled by the
oscillating motion, which, moreover, serves
to move the registering device which marks
the quantity of water which passes through
the apparatus. The water on entering one
cylinder drives out the mercury, which
passes over to the other cylinder; the weight
of the other cylinder is thus increased and
descends, its movement on the pivot opening
the outlet port and closing the inlet port. At
the same time the second inlet port is opened
and the water flows into the second cylinder, thus seguing a continuous cases. and the water flows into the second cylinder, thus securing a continuous passage of the water, while the oscillation of the cylinder controls the registering apparatus.

EXPANSION OF METALS ON SOLIDIFICATION.

An interesting series of experiments are reported to have been made by Messrs. Nies and Winkelman on the changes in volume of a number of metals on cooling from fusion. Of the eight metals (tin, lead, zinc, bismuth, cadmium, antimony, iron and copper) sub-mitted to investigation, six-namely, tin, nincet to investigation, six—namely, tin, zinc, bismuth, antimony, iron and copper—expanded at the moment of solidification, so that the solid is less dense than the liquid metal. The results obtained with the remaining two metals were not decided, though it is believed that they also expand on solidi-

ARTIFICIAL MARBLE.

Mr. E. O'Neill, of London, England, pro-After having remained in such molds about 24 hours, or until it is thoroughly set, the casts are removed, dried, and carefully casts are removed, dried, and carefully smoothed by rubbing the surfaces that are to smoothed by rubbing the surfaces that are to be enameled with sandpaper. For enameling he applies a succession of coats of varnish, preferably in the following order: 1. The best tar varnish. 2. Pontypool varnish; 3. Pale mixing varnish. 4. Copal varnish; and 5. Fine polishing varnish. After the appli-cation of each coat the cast is baked for hout 2.4 hours in an even the terresults. about 24 hours in an oven at a temperature of from 150 to 200° F., and is then rubbed with pumicestone so as to remove all roughness. After the final baking and rubbing the surfaces are polished with rotten store until a brilliant polish is attained. The desired colors are applied along with some of the coats of varnish, the ground color being

Charcoal Pig Iron in Canada.

The increasing manufacture of charcoal iron in the United States appears to be a subject of no little interest in Canadian cir cles, and the Hamilton Spectator (Canada) after referring to this remarkable feature of

our iron trade, says:
From these facts the people of Ontario should learn a lesson. Various projects are afoot for the development of our iron industries. We have as fine ores as any in existence, and capitalists are ready to turn them ence, and capitalists are ready to turn them into merchantable iron. Unfortunately we have no coal, but surrounding the ores are illimitable forests, from which cheap charcoal can be made. The manufacture of charcoal iron involves less capital than other kinds, as it can be profitably carried on with small and simple furnaces; and there is special encouragement in the fact that charcoal iron—indispensable for many purposes—fetches a much higher price than any other. An enterpise of this nature will have nothing of novelty about it. The character of the ore is well known; the cost of the coal and of transportation of the cost of the coal and of transportation of the iron to market can be computed very closely; other expenses of production can be calculated by a practical man almost to a cent, so that the capitalist who desires to undertake that the capitains who desires to undertake this enterprise will know beforehand almost exactly what his iron will cost. He can find out how much our market will consume, and can calculate more nearly than with other irons what competing brands will sell for. We firmly believe that there is a more in-viting prospect for iron makers in this direction than in any other to be found in Canada.

And if we had a good and cheap charcoal iron other industries would spring up around the parent industry, which would go on growing and strengthening as the country increases in population and wealth. Canada can never be great till she makes her own The iron makers have in all ages been masters of the world; the iron importers have always been weak and dependent.

Already we have a large measure of independence, and daily we are reaching out for more. If we desire to make ourselves really independent we must cease to be dependent upon the mother country and upon foreign countries for the most important industrial factor in modern civilization and greatness.

Special Notices.

MACHINERY For Sale.

Two 15 in. swing, 6 ft. bed, Prentice Lathes. Two 18 in. swing, 6 ft. bed, New Haven Lathes Above are back geared and screw cutting.

Above are back geared and screw cutting.
One 20 in. Prentice Drill.
One 36 in. Prentice Drill, back geared and self feed.
One 36 in. Prentice Drill, back geared and self feed.
One 10 in. Gould & Eberhardt Shaper.
One 15 in. Gould & Eberhardt Shaper.
One 20 in. Gould & Eberhardt Shaper.
One No. 1 Davidson Steam Pump.
One No. 1 Davidson Steam Pump.

One 72 in Cupola Bottom. 220c ft. of 16-ib. English T Rails, with spikes, in

bond.
Greenfield Engines, 2½ to 25 horse power.
Roots Force Blast Blowers, all sizes.
All of above Machinery is entirely new, and can be seen at our warerooms. For further particulars address

COOKE & CO.,

12 (Old No. 6) Cortlandt Street, NEW YORK CITY.

Wanted

TO PURCHASE, 2 OR 3 GOOD PUNCHING AND SHEARING PRESSES,

One Large Steam Hammer and one 7-ton Crane Address, giving description and price.

> M. P., P. O. Box 1148, Pittsburgh, Pa.

Wanted.

Traveling salesman, to sell the Crescent Steel Boiler Tune Scraper (the finest tool of its class in the market), on commission, to the trade only. State territory covered, with references. CRESCENT MFG. CO.,

nos Michigan st., Clevelanc, O. Wanted.

BRASS MILL Office of The Iron Age, 83 Reade St., New York.

Wanted.

A Salesman visiting the Jobbing, Hardware, and similar trades, would like to add
A STAPLE SPECIALTY,

Either on commission or salary, Address, A. B. C., Office of The Iron Age, 83 Rende St., New York.

REDUCTION IN PRICE.

LEIGH'S DISCOUNT BOOK

HARDWARE TRADE.

Acknowledged by ALL the best work of the kind ever published. Price by mail ONE DOLLAR.

E. B. LEIGH, St. Louis Elevator, St. Louis, Mo.

Ten to Fifty Thousand Dollars

Can be invested at good profit in a close corpora-tion, in good standing, which has recently trebled its facilities for manufacturing, and still cannol do justice to the opportunity. Home and export trade connections the very best. Responsible principals, having the required cash to invest, ac-tive or silent; give real name and reference to INTERCHANGEABLE, Office of The Iron Age, 83 Reade St., New York.

Special Notices.

New and Second-hand Iron Working M A C H I N E R Y.

E. P. BULLARD, 14 Dey St., New York.

ORNERAL EASTERN AGENT FOR
Akron Iron Co.'s Patent Hot Polished Shafting.

For Sale.

A first-class flourishing RETAIL HARDWARE BUSINESS, with a carefully selected stock of Mechanics' Tools, Builders' and Cabinet Hardware, in Jersey City, now rapidly growing. Stock \$5000. Inquire of H. LUTTGEN,

A Rare Opportunity.

For sale, a first-class established Hardware business, located in one of the most flourishing and best manufacturing towns in Iudiana. Satisfactory reasons can be given for selling. A good party wishing a fine business will do well to investigate. Audress, ress, HARDWARE, RECK & CAVANAGH, 21 Grannis Block, Chicago, III.

To Lease.

The Machinery Complete of a Plate and Sheet Mill.

Machinery modern, ready to set up, and in go Machinery and THOS. R. McKildar., order. Address, 130 Dearborn st., Chicago, It.

40-Inch Lathe for Sale.

One 40 inch by 12½ feet screw-cutting Hewes & Phillips Lathe. It has power cross feed, a heavy four-jawed chuck and raising blocks to swing 52 inches. Weight about 8000 lbs. Will be sold cheap. In apple pie order.

GEO. A. OHL & CO.,
East Newark, N. J.

For Sale.

A GOOD MUCK BAR AND SCRAP SHEAR, For \$510. Address CRAIG RIDGWAY & SON, Coatesville. Pa.

Tork Sale.—One 6-ton 12 ft. dia., 15 in. face, % in. bore fly-wheel; price 2c. per ib. One 4 ft. dia., 2% in. bore fly-wheel; price, 3c. per ib. One 4 ft. dia., 4% in. bore fly-wheel; price, 3c. per ib. One 4 ft. dia., 15 in. face, 5 in. bore pulley: price, 2c. per ib. One 4 ft. dia., 15 in. face, 4 in. bore pulley: price, 2c. Two 4 ft. dia., 18 in. face, 4 in. bore pulley: price, 2c. Two 4 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 in. bore pulley: price, 8 ft. dia., 18 in. face, 4 ft. bore pulley: price, 8 ft. dia., 18 in. face, 4 ft. dia., 18 in. f WM. CLARK & CO., Solar Iron Works, Pittsburgh, Pa. Address,

POR SALE.—One-third or one-half interest in an old established Steam, Gas and Plumb-ing business in a manufacturing city of good size. None but a good practical steam fitter will be acceptable. A German preferred. Address, B. M. HOLMAN, Ft. Wayne, Ind.

Wanted.

A position as Traveling Salesman, either at a noderate salary or on commission. Have som A competent person to take charge of a small Brass and one Fine Mill; also, one Finishing Roller in Brass, and one Fine Wire Drawer. To persons competent, and of good character, liberal wages will be paid and a permanent position furnished. Address

BRASS MILL.

Office of The Iron Act & Beede St. New York.

Office of The Iron Age, 83 Reade St., New York.

WANTED.

A situation as Furnace Manager. Furnaces that have not worked well preferred. Address. CINDER, No. 1107 N. Front St., Harrisburg, Pa.

MANUFACTURERS OF HARDWARE OR House Furnishing Goods wishing to be rep-resented to the Jobbing Trade of New York,

Address
MANUFACTURERS' AGENT,
Office of The Iron Age, 83 Reade St., New York.

COMMERCIAL TRAVELER—Of several years experience and extensive acquaintance West and South, desires a position to travel for a Manufacturing or importing firm. Address.

J. W. STANLEY,
Office of The Iron Age, 83 Reade St., New York.

SITUATION WANTED—By a man in Hard-ware, Tin Ware or House-furnishing Goods store. Has had 20 years' experience, 10 of which has been in the business for himself. Address, C. M. WILDE, Care of 178 Jay St., Albany, N. Y.

WANTED.—A position by a first-class Hard-ware salesman with a large trade all over the U.S. Is also a thorough book-keeper and coontrant. At a moderate salary or on commis-ion. Would take specialties. Address VULCAN, East 1 31st st., N. Y.

HARDWARE MANUFACTURERS, ATTEN-tion.—The best Alarm Money Drawer in the world. Cannot be picked. Easiest working. Three distinct blows on alarm bell. No winding. WALTER L. CHENEY, 34 Beach Street, Boston, Masse

WANTED.—A position as builder of rolling mills, or to remodel them. Will furnish for making Solid Panched Axes, and Washoe mills North and three South. Spent last year North getting posted in all matters pertaining to mills to date. Address, P. O. Box 115, Chattanoga, Tenn.

MACHINES AND SHOP RIGHTS

For making Solid Panched Axes, and Washoe Picks, Mattocks and Hammers, with Dies Commachine Business, established in 1824. For particulars, inquire of LH. COLLER, Office of The Iron Age, 83 Reade St., New York.

Spreigt Notices.

SECOND-HAND AND NEW

MACHINERY.

AUGUST 2, 1882.

The following new and improved Machinists' Toolere part of what we have for early delivery.

138 in. x 12 ft. Pinner. New. August.
138 in. x 10 ft. Pinner. New. August.
22 in. x 8 ft. Pinner. New. August.
42 in. swing, 16 ft. bed New Engine Lathe. Aug. 1.
36 in. swing, 12 ft. bed New Engline Lathe. Aug. 1.
36 in. x 16 ft. Engline Lathe. New. August.
26 in. x 14 ft. Engline Lathe. New. August.
22 in. x 14 ft. Engline Lathe. New. August.

The following on hand.

1 26 lb. X 14 ft. Engine Lathe.

The following on hand.

1 22 ln. swing, 13½ ft. bed Engine Lathe. New.
2 22 ln. swing, 11½ ft. bed Engine Lathe. New.
2 10 ln. swing, 11½ ft. bed Engine Lathe. New.
1 10 ln. swing, 6 ft. bed Engine Lathe. New.
1 10 ln. swing, 6 ft. bed Engine Lathe. New.
1 10 ln. swing, 6 ft. bed Engine Lathe. New.
1 10 ln. swing, 6 ft. bed Engine Lathe. New.
1 15 ln. swing, 6 ft. bed Engine Lathe. New.
1 15 ln. swing, 6 ft. bed Engine Lathe. New.
1 15 ln. swing, 6 ft. bed Engine Lathe. New.
1 12 ln. swing, 6 ft. Hand Lathe. New.
1 12 ln. swing, 6 ft. Hand Lathe. New.
1 10 ln. swing, 6 ft. Hand Lathe. New.
1 20 ln. x 26 ln. x 6 ft. Planer.
1 20 ln. x 26 ln. x 6 ft. Planer. New.
1 20 ln. x 26 ln. x 6 ft. Planer. New.
1 20 ln. x 26 ln. x 6 ft. Planer. New.
1 20 ln. x 16 ln. x 6 ft. Planer. New.
1 26 ln. Drill. B. G. & S. F. New.
1 26 ln. Drill. B. G. & S. F. New.
1 26 ln. Drill. Second hand.
2 4-spindle Drill. Second hand.
2 4-spindle Drill. Second hand.
2 4-spindle Drill. Second hand.
2 1 1 ln. Shapers. New.
1 1 1 ln. Shapers. New.
1 Pratt & Whitney Hand Miller.
1 Sellers Milling Machine. Second-hand.
1 Face Milling Machine. Second-hand.
2 Second-hand Profiling Machine. New.
1 No. 1 Screw Machine. Hrown & Sharpe, 2d hand.
1 Screw Head Slotter. Second-hand.
2 Second-hand Profiling Machines. New.
1 No. 1 Screw Machine. Hrown & Sharpe, 2d hand.
1 Horisontal Boring Machine. New.
1 Kenery Grinder. Second-hand, 1 Double Nut Tapper. New. Horizontal.
1 Horisontal Boring Machine. Second-hand.
2 Senall Power Punching Presses. Second-hand.
1 Horisontal Boring Machine. New.
1 Medium Power Punching Press. Second-hand.
2 Finall Power Punching Press. Second-hand.
3 Foot Presses. Nearly sew.
1 New 1 House New 1 Horizontal.
1 Horisontal Boring Machine. New.
2 New 1 Horizontal Boring Machine. New.
3 New 1 Horizontal Boring Machine. New.
4 Kolled-Acting Presses. Second-hand.
5 Foot Presses. Second-hand.
6 Foot Presses. Second-hand.
6 Foot Presses. Se

Cold-rolled Shafting, Pulleys, Hangers, Couplings, &c. always in store.

The George Place Machinery Company,

121 Chambers and 103 Reade Sts., New York.

Furnace Property For Sale.

Will be sold at a low price. The Charter, Rights and Real Estate of the Bloemsburg Iron Co., together with such portions of the stock of materials and other personal property as purchasers may require. The real estate consists of two blast furnaces favorably known as the Irondale Furnaces, in good condition, steam engine, water power of 100 to 200 horse-power, lands with extensive iron mines, storehouse, numerous dwelling houses, R. R. tracks and sidings several miles in length (connecting the furnaces with both Canal and Railroad), canal wharves with tracks and facilities for receiving and shipping large quantities of freight with economy and dispatch, either by canal or railroad.

This property is situated at Bloomsburg, Pa., within 30 miles of the Wyoping Coal field.

The furnaces have been in continuous and successful use for 37 years. The Company own in addition extensive and valuable ore mines in Snyder Co., Pa.

Ch. Pa.
All the property is in good order and now in profitable use. For further information apply to CHAS. R. PAXTON, President, Bloomsburg, Pa.

FOR SALE.

One Horizontal Engine, 36 in. x 48 in.
One Horizontal Engine, 24 in. x 50 in.
One Horizontal Engine, 23 in. x 35 in.
One "Cortias" Horizontal Engine, 18 in. x 48 in.
Two Horizontal Engines, 20 in. x 50 in.
Two Horizontal Engines, 20 in. x 50 in.
Two Link-motion Engines, 18 in. x 30 in.
One Upright Engine, 28 in. x 30 in.
One Upright Engine, 28 in. x 30 in.
Housings, Pinions and Bod Palm Lable for 18 in.
Train.

264 and 266 Water Street.

For Sale.

THE BARREL, KEG AND BOX FACTORY with Latest Improved Machinery, Buildings, and about three-fifths of an acre of ground, with Railroad and River Privileges direct to factory; situated in the most valuable part of Chattanooga. Or an interest would be sold to the right parties, who would take personal charge of it. For particulars inquire of C. W. GRAY & C.O., Graysville, Ga., or S. B. LOWE, Chattanooga, Tenn.

For Sale.

SELLERS' CAST-IRON TURN TABLE, In good order. For particulars apply to

PURCHASING AGENT, PENN'A RAILROAD CO., Philadelphia.

For Sale.

Two new 28-inch Upright Dills, weight 16co lbs.; quick return; balance spindle latest design; price, \$200. s new 26-inch Upright Drills, same design, only smaller; \$285 each.

One Planer, just completed, with Worcester chuck; 18 in. diameter; length of bed 8½ ft.; table 6 ft.; planes 26 in. wice, 24 in. high; weight over 200 lbs.; one of the smoothest running and stiffest Planers made; price, \$700.

S. M. Vorke

S. M. YORK, Cleveland, Ohio, Corliss Engines For Sale. PROMPT DELIVERY.

One-12-inch cylinder, 36-inch stroke, at once One—14-inch cylinder, 36-inch stroke, in two reeks. Apply to

THE GEORGE PLACE MACHINERY CO. 121 Chambers and 103 Reade St., New York.

For Sale.

TO HARDWARE MEN. RARE OPPORTUNITY. Hardware Store. One of the best stands in Pennsylvania. Established over 30 years. Stock very clean, and best reasons given for selling. Address. Office of The Iron Age, 220 So. 4th st., Phila.

For Sale.

MACHINES AND SHOP RIGHTS

Office of The Iron Age, 83 Reade St., New York.

Special Notices.

NEW IRON WORKING MACHINERY.

ENGINE LATHES.

ENGINE LATHES.

38 in, triple geared (bed to suit). Fitchburg.

28 in, swing, 18 foot bed. Fitchburg.

26 in, swing, 18 foot bed. Fitchburg.

26 in, swing, 14 and is foot bed. Fitchburg.

21 in, swing, 14 and is foot bed. Blaisdell.

20 in, swing, 14 foot bed. Fitchburg.

20 in, swing, 14 foot bed. Fitchburg.

20 in, swing, 10 and 12 foot bed. Gray.

28 in, swing, 10 and 12 foot bed. Blaisdell.

7 in, swing, 6 foot bed. Johnson.

26 in, swing, 6 and 8 foot bed. Fitchburg.

3 in, swing, 6 and 8 foot bed. Blaisdell.

3 in, swing, 6 and 8 foot bed. Blaisdell.

PLANERS, SHAPERS & SLOTTERS.

Stanta S. Shaper. Should be should be shown.

Wheeler, so in x to foot Planer. Hewes & Phillips.

30 in. x 50 in. x 10 foot Planer. Hewes & Phillips.

30 in. x 30 in. x 8 foot Planer. Fitchburg.

21 in. x 20 in. x 4 foot Planer. Wheeler.

22 in. x 20 in. x 4 foot Planer. Fitchburg.

22 in. x 20 in. x 4 foot Planer. Wheeler.

13 in. stroke Shaper. Gould & Eberhardt.

15 in. stroke Shaper. Gould & Eberhardt.

15 in. stroke Shaper. Fitchburg.

21 in. Slotter (willing 50 in.) Hewes & Phillips.

DRILL PRESSES.

DRILL PRESSES.

60 in. Radial Drill double-geared, self-feed, planed an i slotted bed plate with portable table; best English make (Tangyen; weight 4 tons. 48 in. Radial Drill, double-geared, self-feed, slotted and planed bed. Betts.

50 in. back-geared, automatic. Prentice.

25 in. oback-geared, sutomatic. Prentice.

25 in. quick return. Blaisdell.

16 in. quick return. Blaisdell.

18 in. quick return. Flichburg & Blaisdell.

2, 3 and 4 spindle drills. Garvina.

15 in. swing 5 ft. bed Fox Brass Lathe. Gage.

No. 2 (% x 156 Boil Cutters. Merriman's.

Power and Hand M liers. Garvina.

These tools are on han 1 and for quick delivery.

KELLY & LUDWIG, 49 & 51 N. 7th St., Philadelphi , Pa.

For Sale.

Palo Alto Rolling Mills Near Pottsville, Pa.,

ON THE MAIN LINE OF THE POTTSVILLE AND READING RAILROAD.

AND READING RAILROAD.

These mills are in good repair, and can be started in two days time.
Rolls for T-Rails 12 to 70 lbs. per yard, and for Street Hails 18 to 70 lbs. per yard.
Guide Mill Train for Merchant iron ½ to 1 inch.
Rolls for Merchant Bar, round and square, up to 4½ inches.

Number of Puddling Furnaces in both mills, 30; Heating Furnaces, 9; all with boilers attached.
Also Foundry, Machine Shop, Blacksmith Shops, Iron Heuse, Roll House, Carpenter and Fattern Shops, Stables, handsome Dwelling for Superintendent, 11 Tenen.ent Houses, a Brick Office, and ample grounds for stock and cinder.
For further particulars address

Messrs. LEE & McCAMANT, Extrs., Pottsville, Pa.

THOS. F.WRIGHT, 1804 Race St., Philadelphia, Pa. HUGH W. ADAMS, 56 Pine St., New York.

For Sale.

o in. Merchant Mill, 56 Rolls.

18 in. Merchant Mill, 6 ft. Rolls.
Till Hammer for Blooms.
2 48-in. Reynolds Turbines.
Lever Shears, Cam motion.
Crocodile Squeezer.
Heavy Roll Lathe, with small auxiliary Lathe.
14 in. x 14 in. Vertical Engine in Perfect Order.
A. G. BROOKS & WINEBRENER.
261 N. 3d St., Philadelphi

For Sale.

A New York Steam Engine Co. Radial Drill; ew and first-class in every respect; will drill to the center of 7 feet.

Send for description JOSEPH LUMLEY.

For Sale.

4 Noiseless Vertical Engires, 8 x 8 Cylinder. New.
1 Vertical Engine, 8 x 10 Cylinder. Second Hand,
1 20 H. P. Vertical Tubular Boiler; cast-iron base
plate; all complete; in good order. Second Hand,
1 11 H. P. Vertical Tubular Boiler; cast-iron base
plate; all complete; in good order. Second Hand.
F. B. BANNAN,

STEAM HEATING AND BRASS WORKING, Pottsville, Schuylkill Co., Pa.

For Sale.

One of the largest Hollow Ware and Stove Foundries in the city of Philadelphia, which has been in operation for the last 38 years—one of the partners having recently died, and the remaining partner being desirous of getting out of business. All communications that mean business will 'receive prompt attention. Address "S. C."

Office of The Iron Age, 83 Reade St., New York.

For Sale.

Second-hand

BEECHER & PECK, Lock Box 122, New Haven, Conn.

For Sale.

Horizontal Engines, 16 x 42 (Hewes & Phillips), with cut-off; 16 x 36 (Currier), with cut-off; 16 x 32 Upright Engine, with cut-off; 16 x 32 Upright Engine, with cut-off; one 8.h. P. Locomotive Boiler; one 4-ton "Otis" Freight Elevator; one 50 h. P. Horizontal Tubular Boiler. All the above guaranteed complete and in perfect order. For particulars address bove guaranteed complete and in performanticulars address
BELCHER & BAGNALL,

Machinery For Sale. (ALL New).

One 20-in. Power Drill Press. Three 20-in. Davis Power Drill Presses. Six Hand Blacksmith Drills. Three Goar Cutting Attachments for Lathes. Twelve Assorted Chucks, 4 in, to 18 in. One Bolt Cutter, ½ in. to 1½ in. Three Barnes Lathes. Six Hand Shearing and Punching Machines. Two Sturtevant Blowers. Also, one second-hand Horizontal Engine, 12 × 24. One second-hand Horizontal Engine, 12 × 16.

JACKSON & TYLER, 16 and 18 S. Howard S., Baltimore.

Shears For Sale.

POWER SHEARS for cutting Bar and Scrap Iron, 6 in. x ½ in., 2 in. x ½ in., and 1½ round of square, "Alligator" style, new. Net price, \$310

PEERLESS PUNCH AND SHEAR CO., 38 W. Dey St., New York.

Wanted.

Poughkeepsie, N. Y.

Special Notices.

New and Second-hand

MACHINERY.

IN STORE, MAY 25.

IN STORES, MAY 25.

One Screw Planer, 70 in. x 11 ft.
One Screw Planer, 34 in. x 14 ft.
One Engine Lathe, 22 in. x 12 ft.
One Engine Lathe, 17 in. x 3 ft.
One Engine Lathe, 16 in. x 6 ft.
One Engine Lathe, 17 in. x 2 ft.
One Lathe, 14 in. x 4 ft. 6 in.
One Lathe, 14 in. x 4 ft. 6 in.
One Lathe, 12 in. x 5 ft.
One Hench Lathe, 11 in. x 3 ft. 6 in.
Two Pratt & Whitney Gear Cutters.
One Profile Machine.
One You'd & Light Milling Machine, No. 4.
One large Index Milling Machine, No. 4.
One Ames, 4 Spindle Drill.
One Onniels Planing Machine.
One Crank Planing Machine.

One Daniele Planing Machine.
One Daniele Planing Machine.
One Crank Planer.
One Burleigh Rock Drill, No. 4. New.
One Woodward Pump, No. 4. New.
One Woodward Pump, No. 3. New.
One Knowles Pump. Special. No. 7.
One No. 44 Knowles Pump. New.
One Corliss Beam Condensing Engine, 30 in. x 72 in.
One Oscillating Engine, 75 in. x 10 in.
One Horizontal Engine, 75 in. x 10 in.
One Horizontal Engine, 6 in. x 10 in.
One Horizontal Engine, 6 in. x 8 in.
One Baxter Engine, 6 in. x 8 in.
One Portable Engine, 8 in. x 10.
One Portable Engine, 8 in. x 10 in.
One Fortable Engine, 8 in. x 10 in.
One Locomo.ive Boller, 10 il. P.
Shafting, Hange: 8 and Pulleys.
Fairbanks Scales.

J. Grav's Machinery Depot, 37 Dey St., N. Y.

ROBERT R. HAYDOCK & CO.,

AUCTIONEERS.

No. 75 Murray Street, New York,

SOLICIT CONSIGNMENTS OF

HARDWARE, CUTLERY, &c. FOR SALE OR TO RENT.

New, light Factory : 70,000 floor feet : 275 H. P. Corliss Engine, giving power at minimum

Shafting, piping, elevator, &c., all complete and modern. Lowest insurance rates. Railroad siding and ample vard room. Immediate posses-

A large quantity of General and Specia Machinery at low prices.

SHARPE RIFLE COMPANY, Bridgeport, Conn. Manufacturing Property for Sale. The Real Estate of the late Foundry and Ma-

The Real Estate of the late Foundry and Michine Company of Taunton, Mass. Buildings consist of Foundry, Machine, Erecting and Blacksmith Shops, and covering about 60,000 square feet of ground. For particulars apply to THE GEORGE PLACE MACHINERY AGENCY,

121 Chambers St., New York DESIRABLE FACTORY PROPERTY

For Sale.

Being the Mills formerly occupied by Slade Woolen Co., Ansonia, Conn.

The buildings consist of the Main Mill 162 x 35 feet, 4 stories; and 3 outbufdings, as follows:
One 50 x 100, 1 story. Brick.
One 50 x 50, 3 stories. Brick.
One 50 x 52, 3 stories. Stone.
Also Barn and one Double Tenement on property.
50 H. P. Engine, Harris-Corliss make.
126 H. P. Boilers, with shafting, pulleys, &c.
The lot, about 2 acres, is on R. R. track, well standard near Depots and P. O.; 2 lines for freight to N. Y.; only 2½ hours by rail to N. Y.
For further particulars address.

CHAS. L. HILL,

CHAS. L. HILL, Ansonia, Conn.

For Sale. The Industrial Works of Shamokin, cwned and successfully carried on for a number of years by the late Wm. Brown, deceased, consisting of Foundry and Machine Shop, and a large stock of Patterns regarded as part of the property. Boiler Shop, Blacksmith Shep and Factory for the manufacture of heavy coal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rafl, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. The works are now running, but in a very short time possession can be given. Easy terms of payment are offered to suit a purchaser of limited capital.

Offered for sale by

WM. McILVAIN & SONS, Reading, Pa.

DROPS and LIFTERS. DESIRABLE MANUFACTURING SITE For Sale or Rent.

Being the extensive property formerly occupied by the BUFFALO IRON AND NAIL WORKS, AT BLACK

The buildings cover over three acres, and are of brick and wood, substantially constructed, and with slate roofs. They could easily be changed, if necessary, to suit almost any kind of business. For Water and railroad communication to all parts of the country.

Maps of the property, with full description, sent on application.

P. P. PRATT or F. L. PRATT, Buffalo, N. Y. ROCK, IN THIS CITY.

For Sale.

One pair good, sound CHILLED ROLLS, 25 in. x 60 in., made by A. Garrison & Co., Pittsburgh. No use for them.
Also a HEATER, 18 in. x 60 in., with 21 2-inch tubes. Been used some. Will sell cheap, CHAS. FUSTON & SONS, Coatesville, Chester County, Pa.

For Sale.

Eitll year Offin Puthro Shea Also Also Also Can Afor I

Two Corliss Condensing Beam Engines,

32 in. x 72 in. cylinders. Add THE HARTFORD ENGINEERING CO., Hartford, Conn.

DRILL PRESS FOR SALE.—New Upright Power Drill Press, swings 21 inches, back geared, quick return motion, steel spindie and shaft, superior Enish; weight, inc.; hight, ofeet; price. \$21.0.

**PEERLESS PUNCH AND SHEAR CO.

**50 W. Dey S. New York.

Special Notices.

Wholesale Auctioneers.

LARGE TRADE SALE OF Hardware, Table and Pocket Cutlery.

TUESDAY, WEDNESDAY and THURSDAY, August 8th, 9th and 10th.

At 83 CHAMBERS and 65 READE Sts., New York.

TUESDAY, Aug. 8th.-The sale will comprise a general assertment of Hardware; also, 1000 doz. Files, 500 doz. Drawer, Till and Padlocks, 200 doz. Hammers and Hatchets, 600 doz. Sash Brushes, asst. sizes; 100 doz. Steel Shovels and Spades, 50 doz. Haud and Panel Saws, 500 dos. Campbell & Johnson Files, 104 cares extra quality Cut Tacks, full % weight, all sizes; 100 Reams Sand Paper; together with other goods too numerous to

WEDNESDAY and THURSDAY, Aug. 9th and roth -SPECIAL SALE of Table Cutlery, Carvers, Butcher Knives, Seconds, comprising over 12,00 doz. Table Knives and Forks, desirable pat terns, in ebony, bone and cocoa; 2000 doz. Table Knives in ivory, rubber, ebony, ivoride, cocoa and bone; 1000 pair Carvers, desirable patterns; several hundred doz. Plated Tea and Table Spoons and Forks, standard plate on 18 per cent. nickel silver, and goods that we can warrant of superior quality; several hundred doz. Plated Steel Table, Medium and Descert Knives, 12, 13 and 16 oz. plate; also a large line of Butcher Knives, Bread and Kitchen Knives, Walnut Carving Knives, &c., 500 doz. 18 per cent. nickel silver Tea and Table Spoons and Forks, not plated; 200 doz. Britannia Tea and Table Spoons; also 1000 doz. cast-steel, japanned and nickel plated Straight Trimmers', Tailors' and Barbers' Shears; large line of American and Foreign Pocket Cutlery, in 1, 2, 3 and 4 blades, &c., &c.

Buyers who cannot attend the sale can forward their orders, and goods will be purchased free of

Hardware Business For Sale In Western New York. Stock of hardware, stoves, tinware, etc., in elegant brick store; three new railroads now building, and trade rapidly growing. A good party taking a fine business will do well to investigate. Address W. W., Box K. Office of The Iron Age, 83 Reade St., N. Y.

IRON AND METAL Exchange Memberships

Bought and Sold by WM. WILLIS MERRILL,

4 Stone Street, Room 69.

EXCHANGE MEMBERSHIPS. The Sherman Process Co.

9 Pemberton Square, Boston, Mass., Assue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces. The use of this Process improves the quality of product, saves fuel and labor, and does not require any change in furnace or manner of working See page 17 of The Iron Aue of Oct. 25th. 1877.

Wanted.

A Coffee Mill Squeezer Address.

In good working order.

PENN IRON CO., LIMITED,

LANCASTER, Pa. Export.

An American of middle age, with a long b An American of middle age, with a long busine experience in Foreign countries, is making up voyage to the East Indies, Australia, New Zealar and Cape Colonies, Africa, and will take a samp line of American hardware, machinery and specialties, if a sufficient number of responsible house apply. Solid references given.

Address

Address

P. O. Box 452, New Haven, Conn.

A Firm of Metal Agents

desire to communicate with American manufac turers of specialties for mines, railways, agricultural and building trades, with a view to representing them in London.

METALS. 11 Queen Victoria street, London E. C., England.

Cutlery Salesmen Wanted.

By a manufacturing and importing cutlery house in this city. To those who can control a trade among retailers liberal terms will be given. X. Y. Z., Address.

Ofnce of The Iron Age, 83 Reade St., New York.

Sheet Iron.

300 tons No. 20 to 28 for immediate delivery.
200 tons to be made to order on very short notice. Write for prices to

PACKARD, SMITH & CO.,

Warren, Obio W ANTED.—A situation as Superintendent or Manager of Blast Furnace or Ore Mine. Either Hot or Cold Blast Charcoal or Coke. Eleven year's experience. Best of references, Address MANAGER, Box 7.
Office of The Iron Age, 83 Reade st., New York,

PUNCHING PRESS AND SHEARS FOR SALE-Rew Bollermaker's Punching Machine, 2,4 neh throne Press And Sale Power Shears, cutting 3-4 plate-fron, 27 or 35 inch throat. Also tayer sizes, single and combined "FERLESS PUNCH AND SHEAR CO. 38 W. Dey Street, New York.

E. BISSELL & CO., Trade Report.

BRITISH IRON AND METAL MARKETS.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, Aug. 2, 1882. Scotch Pig.-The market is very unset tled, and makers' prices are difficult to quote. The following are as near as they can be given under the present state of the market. Coltness

Sartsherrie .. Ardrossan......55/6 Glengarnock

usual 21/4 %. The following are to-day's prices, f. o. b. :

No. 2 4 46/ No. 3 4 44/ No. 4 Forge 43/44/

Nos. 1, 2 and 3, equal portions, are quoted 57/, f. o. b. shipping ports. mproving demand, and prices are stronger. causing their bonds to decline. We quote 7" x 7" Bessemer Blooms, 82/6, f.

o. b. future delivery. Manufactured Iron.—Business has been mit gold exports. The posted rates for good during the week, and prices are tend-prime bankers' sterling are unchanged. The ing upward. We quote as follows:

Horps, 20 W. G. and over. Sheets, 20 W.G. & under.

Steel Rails .- The market is active and demand improving. Prices are steady. We quote Ordinary Sections, f. o. b. shipping port, £5 @ £5. 5/.

Iron Rails.—Very little business doing

and quotations are nominal. Welsh are

Old Rails .- The market is quiet, with moderate offerings and fair sales. Prices are firmer. We quote: Old Tees, £3. 15/ @ £3. 17/6; and Old D. H.'s, £4. 2/6 @ £4. 5/, c. i. f. New York.

Scrap .- There is a better feeling in the market, and prices show a tendency to advance. Transactions have been light. Heavy Wrought is quoted £4. 2/6 @ £4. 5/, c. i. f. totals of this week compared with that of New York. Bessemer Crop Ends, run of the mill, are quoted 62/6 @ 65/.

Copper.-The market is quiet, with a business doing. Prices are steady Best Selected is quoted £73. 10/ @ £74, and

Chili Bars, £68 @ £68, 10/. Tin .- The market is unsettled and prices weaker. The demand is very light. quote: Straits Ingots, spot, £102. 15/ @

£103. 5/, and futures, £104 @ £104. 10/. Tin Plates .- Both demand and prices are steady, and transactions for the week

have been fair. We quote:

Spelter.—The market is quiet and business fair. Prices are firmer. We quote Or-

dinary at shipping ports, £17 @ £17. 2/6. Lead .- Prices are steady and demand light. We quote Common English Pig, £14. 7/6 @ £14. 10/.

Freights-Continue as last quoted, viz. Steam from Glasgow to New York, 11/6 @ 14/; ditto from Liverpool to New York, 10, @ 12/6; Liverpool to Philadelphia, 14/@ 16/6.

FINANCIAL.

Office of the Iron Age, Wednesday Evening, August 2, 1882. compared with one week ago, is unchanged The crop prospects, everywhere recognized as the true basis of business calculations, are rather improved than otherwise by the gentle rains which have fallen East, West. North and South, almost removing the possibility of damage from drought between this date and the harvest. The wheat croy is secured beyond a preadventure, and i magnificent. Corn, which was backward. appears to have rallied, so that now severa of the States in the Northwest promise the largest harvests ever gathered. Export for mining stocks; prospects, too, were perhaps never better, out there is a temporary check just now, aused by the unexpected falling off in re-

stronger market. On the Stock Exchange during the week ander review the market has been irregular, which may be attributed to professional WANTED.—A position by a thorough Hardware Salesman and Bookkeeper, either in the house or traveling, on commission or salary. Can furnish unquestionable reference. Address, opening Southwesterns were favorably inmanipulation-efforts to cover short con A MECHANIC AND ENGINEER wishes an engagement to lay out or superintend work for responsible parties.

A. B., Box 9,

Continue of The Iron Age, 83 Reade St. New York

Opening Southwesterns were favorably influenced by the large movement of grain into Chicago and St. Louis. The stocks which showed the most strength were Kansas and Texas, the Northern Pacifics, Oregon Transported by the large movement of grain into Chicago and St. Louis. The stocks which showed the most strength were Kansas and Texas, the Northern Pacifics, Oregon Transported by the large movement of grain into Chicago and St. Louis.

ceipts at Western points, and resulting

tone was heavy, due to active money, and there was a succession of raids by large op erators on special stocks, evidently to re cover some that had been sold. Throughout there was a strong undertone, and on Tues day and to-day transactions were on a large scale. The special feature this afternoon was an advance in Northwest shares, accompanied by a report that the executive committee of the company had recommended the division among the stockholders of a surplus supposed to be something like \$20,000. coo. The St. Pauls and other properties shared in the upward movement. The leading stocks to-day ranged as follows: Northwest, 138 @ 148; ditto Preferred, 1531/2 @ 165; Milwaukee and St. Paul, 1201/2 @ 122; ditto Preferred, 1341/2 @ 13534; Denver, 6414 @ 65%; Rochester and Pittsburgh, 30% @ 271/2; Kan. and Texas, 411/4 @ 423/8 Lighterage from Ardrossan to Glasgow is 2/6 Louisville, 75 @ 76%; Texas and Pacific, 6 per ton. Cleveland Pig.—The market is unsettled and prices weaker. No. 3 G. M. B. is quoted and W., 138 % @ 139%; Northern Pacific. 43/9, f. o. b. makers' wharves in Tees, less 49% @ 501/2; ditto Preferred, 90% @ 911/2; Lake Shore, 115 1/3 @ 116 1/2; Western Union Telegraph, 8934 @ 9058; Wabash, 3834 @ 39%; ditto Preferred, 681/8 @ 69; and Jersey Central, 811/4 @ 821/2.

The amount of gold taken by to-day's steamer was \$1,250,000. She would have Bessemer Pig.-There is no change to taken \$1,500,000 if the bars had been note, the market ruling firm, with good stamped and in readiness. The Wall street business doing. W. C. Hematites, mixtures bullion dealers explain that the Italian Syndicate had rather pay costs, amounting to \$2500 on the \$1,000,000, than borrow in Eng-Blooms.—The market is active, under an land, and perhaps distarb the money market,

> The market for foreign exchange continues very dull at rates which do not peractual rates are 4.85 @ 4.85 1/4 and 4.88 1/4 @

Money is plentiful, and the demand for commercial paper light. Rates are quoted the company, with J. B. Anthony, the president, was made by the Safe Deposit and @ 51/2 %; four months' acceptances at 5 @ 5¾; good single names, four to six months to run, 51/2 @ 61/2.

The exports of domestic produce from this port were again moderate in volume, the total for the past week amounting to \$6,000,-443, against \$7,302,229 for the same week last year. Wheat was shipped in considerable and flour in fair quantities, but exports of other breadstuffs, provisions, petroleum and cotton were either moderate or light.

The President's veto of the River and quoted, nominally, £5. 5/, f. o. b. shipping Harbor bill was not known early enough in the daysto produce any effect on the commercial exchange

The Tariff Commission have resolved to spend Monday and Tuesday next in New York, for the purpose of obtaining a personal insight into the detailed workings of the Custom House.

The following is an analysis of the bank

,	last week :				
١	Loans	July 22.	July 29. \$332,610,300		parisons.
ı	Specie Legal t'd'rs	64,251,600	60,610,500	Dec.	
	Tot.reserve Deposits	88,814,700 22,863,200	85,298,300	Dec.	3.516,400
	Reserve re- quired	80,715,800		Dec.	708.525
-	Surplus Circulation.	8.098,900	5,381,025	Dec. Inc.	

The bank return for the week shows a loss of \$2,717,875 in surplus reserve, which now stands at \$5,381,025 above, against \$10,030,-725 above at this time last year, and \$15,842,-375 for the corresponding date in 1880.

The importations of specie and bullion at this port during the week ending July 28th were \$13,003, consisting of \$9507 in gold, and \$3586 in silver, as against a total of \$351,438 for the week ending July 30th last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year:

Gold		1881. \$29,624,039 1,754,218
Total	\$2,091,030	\$30,378,257
Gold	1881-82. \$25,188,140	1880-81. \$96,903,007 4,225,569
Total	\$27,680,491	\$101,128,876
United States Gove		

The general position in financial circles, the last week have been lower and not so

	Bid. Ask
U. S. 6's, '81, continued at 31/4 1	or% E
U. S. 5's, '81, continued at 350	31 31
C. 8. 41/2'3 :29: registered	13% 1
U. S. 452'8 1891 coupon	458 11
U. S. 4'8 1907 registered	20% 12
U. S. 4'S 1907 Coupon	101/4 11
U. S. Currency 6s 1895	30 .
U. S. Currency 68 1896	18 .
U. S. Currency 68 1897	
U. S. Currency 38 1898	
U. S. Currency 6s 1899	5 .
MINING STOCKS.	

The following were the closing quotations Rid Asked

	Atherican Pass	5	
	Anne	17	1
	Alice	2.30	2.5
	Alta Mont	07	-
	Bechtel	15	
	Belle Isie		
	Bodie		7
	Buckeye		
	Bulwer		
	Bassick		9
	Bradshaw		
	Calaveras	6	
	Cale B. H		
	California		
1			
1	Climax		9
1	Consolidated Imperial	3	
1	Consolidated Pacific	10	
J	Chrysolite	2.40	9.5
J			7
ì	Cherokee	20	
1	Durango	1.2	
1	Decatur	63	
1	E. Oregon	2.40	9.5
1	Empire-Utah.	1.45	
1	Eureka C	33%	000
		-3/8	200

-		
-	1	
d		10
-	Granville	1 3
,-	Gr. Prize 3	8
-	Goodshaw	. 40
4	Great Eastern	4 5
ŧ	Green Mountain	0
-	Gold Str 2	
	Homestake 18	19 19
0	Hukill	0 38
1	Horn Silver	10
	Hibernia	5
66		8
	Independence 5	
,	Iron Silver 2.50	2,10
1	Lacrosse 2	7 29
_	Leadville Con	- 71
	Little Pitts	3
-	La Chief 5	0
	Navajo 4.2	0 5
•	Nor. Belle	6
-	N Belle Isle 2	0 25
	Rappah'k	9
	Robinson Con 1.3	0 F.40
	R. Sun 4	50
	Red Eleph	
1	S. Cliff 6	8
	Sutro	9 48
	Spr'g Val 3.0	
1	S. Hite, new	
П	South Pacific	
- 1	St. L. No. 1 and 4	
1	St. L 2 and 3 2	
1	Tip Top 1.30	
-1	Tioga	7
1	Tuscarora	13
ı	Union Con 7.7	
J	Unadilla8	
1	Vigina 1 10	X.30
1		
1	-	

GENERAL HARDWARE.

Beyond the fact that the demand for General Hardware is steadily increasing, there is very little to be said. No changes in values have been announced during the week, and the tone of the market is decidedly strong. There are in the city at present a good many buyers, principally from the Southwest, and purchases for that section are being made on a liberal scale.

The Providence Tool Company, under the direction of the creditors' committee, sold the lower mill a few days ago for \$325,000, so that henceforth what was known as the sewing machine department becomes an independent establishment. Some of the creditors have since caused more or less annoy ance by bringing attachments. One against dent, was made by the Safe Deposit and Trust Co., of Worcester, and another by the National Bank of Commerce, of New London, on a claim of \$20,000. A dispatch received to-day (August 2) speaks of an attachment for \$60,000. Some of the parties in this city who are interested say the only effect of these movements would be to drive the company into an assignment, which the creditors, as a whole, have no desire to do. The general work of manufacturing proceeds as usual.

The demand for Nails is active, the local trade having picked up considerably during the last few days. From the West and Southwest the inquiry continues large, and some heavy orders at full card rates have been placed during the week. We quote, as

have issued an appendix to their catalogue, in which they illustrate such seasonable goods as Coal Vases, with and without Fire Set attachments; Helmet and Tunnel Coal Hods, Fire Sets, Toilet Ware, Cuspadores, Bird Cages, &c., in new and elegant designs. To better illustrate their new goods they have issued, in addition to the appendix nentioned above, colored lithographs of Coal Vases and Toilet Ware, which will prove a valuable guide to buyers. These lithographs, together with the appendix, will

dent and treasurer, and Charles F. Chaney, States during the first five months of the year have been as under, as per Messrs. Gilfillan, Wood & Co.'s Singapore report: dent and treasurer, and Charles F. Chanev. the confidence of all those doing any business

Respectfully,
F. A. GROSHONG. We invite attention to the advertisement of Dodman & Burke, on the 22d page, in which they give a list of a number of imfacturing concerns which they represent.

IRON.

American Pig .- There is little, if any change in the condition of the Iron market since our last writing. Few sales of large blocks have transpired, but in small parcels, the aggregate of which is considera ble, a good business is reported. The tone of the market is strong, and prime Lehigh brands are firmly held for full figures. No. 1

and affoat lots not more than the usual remport of the plates into the united states for first eleven months of fiscal year: to sell, and the market is decidedly strong a regards values. Sales are reported of about 500 tons various brands, in lots, at our qu tations, and we also hear of a sale of Middlesboro' Iron, 500 tons to arrive, on private terms. We quote: Eglinton, \$23.75 @ \$24; Carnbroe and Glengarnock, \$25; Langloan, \$26.50 @ \$27; Coltness, \$27 @ \$27.50; and Summerlee, \$26.50.

Steel Rails .- We have not heard of any important business in Steel Rails during the week. There is said to be considerable in- far as large lots are concerned, while in a

quiry, and the outlook for the balance of the year is encouraging. We quote: Steel Rails at mill, \$47.50 @ \$50.

Old Rails .- We hear of a fair inquiry for Old Rails, but buyers do not seem to take hold, and business lags in consequence. T's are quoted \$26.50, and Double Heads, \$28.

Scrap.-A good deal of Wrought Scrap for shipment has been negotiated for within the past week or ten days. Sales to consumers in lots, aggregating 5000 tons, to arrive, at about \$28.50, are reported. We quote No. 1 Wrought, to arrive, \$27.50 @ \$28, and Prime Selected from yard, about \$29 @ \$30.

METALS

Copper.-The market has been in a quiet,

though firm mood, sales not exceeding 200,-000 lb Lake Superior at 18 \$\$\phi\$ (@ 18 \$\frac{1}{2}\phi\$, the asking price for "Anchor" brand, and Baltimore being 1734%. Manufacturers report a fair trade. Some inquiries have come from Europe about Lake Copper, but so far the companies have latterly shown no disposition to sell for export. They answer that all the Copper they have got for sale is wanted on this side. "London, July 22.—On Monday morning last the Chili charters were announced for the first half of the present month as only 1400 tons, which greatly tended to strengthen the market, for there were many operators who had built their hopes upon light charters, and a limited quantity only being advised, a good tone was naturally given to the market. Buyers to some limited extent became more eager to effect purchases, but the great support which seems to be given to the market at the present time does not appear to be altogether the result of large pur chases, but rather a combined reluctance on to sell for export. They answer that all the chases, but rather a combined reluctance on the part of holders to make sales, so that during the past week, when purchases have had to be be made, buyers have had to pay rather stiffer rates. The rise which has been effected is chiefly visible in Chili Bars, other descriptions, although firm, not having undergone any alteration, while the advance in Chili Bars has been steady, stiffening to the extent of about 2/6 P ton P day. A the extent of about 2/6 P ton P day. A gradual rise such as this can hardly fail to improve the tone and implant a more cheerful and can distribute the constant of the contract of the contra ful and confident feeling, and more particularly so just now, when manufacturers report holding a very fair number of orders port holding a very fair number of orders—sufficient in many instances to give regular employment to their mills for some weeks hence." Per cable, London, came £73 for Best Selected yesterday, and £68 for Chili Bars. To-day we receive from there the ensuing message: "Market quiet, with a light business doing; prices steady. Best Selected, £73. 10/ @ £74; and Chili Bars, £63 @ £68. 10/." Manufacturers have made no change in prices. They quote: Bottoms,

before, 10d. to 60d., \$3.40, net, in wholesale lots, and, in a small way, an advance of 10 @ 15 cents per keg on the above-named price.

John C. Jewett & Sons, Buffalo, N. Y., have issued an appendix to their catalogue. moment for large lots, jobbing ones fetching 25½¢@ 25½¢; Lamb and Flag is worth 24¢@ 24¼¢. Messrs. William I. Russell & Co., 12 Cliff street, New York, in their valuable semi-monthly circular of July 31, quote Straits Tin, 25¼¢, against 21¢July 31, 1881; 21¼¢, 1880; 14¾¢, 1879, and 13¼¢ in 1878. They make the visible supply on that date 3104 tors, against 3254 on July 15, 1882. Outside importers and speculators at present hold 400 tons. Shipments in July from the Straits' settlements to the United States have Straits' settlements to the United States have been Sco tons; none have been made to Eng-land, while to the latter country there were lithographs, together with the appendix, will be mailed to the trade on application.

We have received the following circular:

New London, Conn., July 28th, 1882.

The undersigned hereby informs the correspondents of the Wilson Mfg. Co. that he will resign the office of president of the company on the 1st of August ensuing, and that after that date its affairs will be under the management of William Belcher, president and treasurer, and Charles F. Chaney.

														Picu													d.	to to	ons
183a.														44,20										,	i		2	,642	
1881														20,88	15			,									E	,250	
1880								ě.				,		66,70	2												3	.982	
1879.														38,08	8												2	274	
1878.														29,12	7													739	
1877.			 				٠	0		,		۰		24,63	0													.530	
IMPO	R	т	6)1	p	3	C1	[2	ı	1	B	m	03	THE		53	¢1	T	E	:1)	5	ri	'n.	k.	TE	R	DUR	IN

Re-export	Cwts. 170,424 22,728	\$4,407,970 586,224
Equal to tons	147,696 7,385	\$3,905,746
Re-export	Cwts. 156,904 8,316	83,650,573 18),283
Equal to tons	140,578 7-430	\$3,462,270
Tin Plates.—Our market	has rema	ined quies-

brands are firmly held for full figures. No. I
X Foundry is quoted to-day \$26 @ \$26.50,
and No. 2 X, \$24 @ \$24.50, against \$25.50
@ \$26 and \$23.50 @ \$24, the prices ruling
a week ago. Gray Forge is unaltered,
and we continue to quote the same \$22 at
tide-water.

Scotch Pig — The demand for foreign Iron Scotch Pig.—The demand for foreign Iron is not active, but as stocks are very light been firm."

Scotch Pig.—The demand for foreign Iron don to-day: "Both demand and prices steady, and transactions for the week have been firm."

1	882.	
Cwts	Cwts, 3,591,114 16,166	\$14 972,729 70,203
Equal totons	3,574,848	14,902,526
1	1881.	
Cwts	Gwts. 2,992,026 9,083	\$12,855,320 48,408
Equal to tons	2,982,943	\$18,80€,922
Lond The weeks	Las Lass	2

Lead .- The market has been inactive, so

small way Common Lead continues to bring \$5.10 \$5.15. Larger consumers are stocked for the present. At the close the market may be called 51/8 \$\epsilon\$. As for Refined, corroders, for the moment, buy only from hand to mouth, but during the current month one or the other will have to re-enter the market. We quote: Refined, \$5.15 @ \$5.20, nominally; it would, indeed, not be easy to get nally; it would, indeed, not be easy to get \$5.15 just at present. As Common Lead can be laid down here from Europe at \$5.15 @ \$5.17½, importation might be thought of should the market here stiffen up again, but the apprehension of a sudden drop here paralyzes action in this direction. European Lead production last year is put down at the following figures: Spain 120,000 following figures: Spain, 120,000 the following figures: Spain, 120,000 tons; Germany, 90,000; England, 67,000; France, 15,000; Italy, 10,000; Greece, 9000; Belgium, 8000; Austria, 6000; Russia, 1500; total, 326,500. Adding thereto the output in this country of something like 110,000 tons, a total between Europe and America, including Mexico, Canada and South America, would be arrived at of 440,000 tons, which is probably correct. At St. Louis Soft is worth \$4.80 @ \$4.85, and Hard \$4.75, with 38¢ freight this way. Manufacturers have been subject to no change since our ors have been subject to no charge since our last. We quote: Fipe, 7½¢; Sheet, 8¢: Tin-lined Pipe, 15¢; and Block 45¢; all less το ξ to the trade. We receive from London the cable news below: "Prices steady and demand light. Common English Pig, £1.4 7/6 @ £14 10/."

Spelter and Zinc .- Although the feeling has been reported to be an improving one in Europe, the demand here lessened the moment more Spelter was offered, so that it would not be easy to get over 5 1/4 \$\psi\$ @ 53/4 for Domestic to-day, nor over 5 1/2 \$\psi\$ for Si lesian. Spelter production, we perceive from our Italian exchanges, was last year 99,405 tons in Germany (which includes 65,439 in Silesia), 85,000 in Relegion 65,439 in Silesia), 85,000 in Belgium, 22,000 in England, 13,715 in France, and 3200 in In England, 13,715 in France, and 3200 in Austria; together, 223,320 tons. We quote: Bertha Refined, 8¢, and Bergenport, 9½¢. From London we are cabled as under: "Market quiet and business fair; prices firmer. Ordinary, at shipping ports, £17 @ £18. 2,6." Sheet Zinc.—There is not much discret. MA @ \$1/4. doing at 71/4 @ 71/4.

IMPORT OF SPELTER INTO THE UNITED STATES. FIRST ELEVEN MONTHS. Fiscal Year 1882. Pounds. 16,878,538 Equal to tons, 8,439 Fiscal Year 1881.

.....tons. 846 Antimony.—A fair jobbing trade has been transacted during the week, at 111/4 @ 111/2 for Hallett, and 131/4 @ 131/4 for

\$68,794

OLD METALS, PAPER STOCK, &C.

The purchasing prices offered by dealers

Copper, heavy....
light....
Copper Bottoms.
Yellow Metal...
Brass, heavy...
Brass, light.... n, heavy Lead, heavy. Fea Lead.... Pewter, No. 1. Pewter, No. 2. Wrought Iron Wrought Iron
Light do...
Stove Plate.
Machinery do.
Grate Bars.
Electrotype plates.
Stereotype plates.
Small type

The prices current (prices paid by local dealers) for Rags, &c., are as follows:

Canvas, Linen	9 D. 356c. O. A C.
White Cotton, New	" 316C. @
No. 2	00 24C 60 24C
White, No. 1	11 10 60
45 No. 2	" 13/10 Ch 2 C.
Seconds	10 14c. 60 11/c.
Boft Woolens	" C. @ 8 C
Mixed Rags	11 x3/c. @ 2 C.
Gunny Bagging	" 11/2 C. @
Jute Butts	2 C. 6h 21/C.
Kentucky Bagging	1 C. @ 3%C.
Book Stock	8 C. @ 21/4 C.
Newspapers	34c. @ 11/4c.
Waste Paper and Scraps	1/2 G. @ 1/4 C.
Kentucky Bale Rope	" 35c. 6 4 C.

FOREIGN TRADE MOVEMENTS.

The following is a summary of foreign trade movements during the past week : IMPORTS.

For the week ended July 28:

Bince Jan. 1.... \$293,592,896 \$246,834,664 \$294,539,269 Included in the imports were articles of merchandise valued as follows:

			Danie Date
	Quantity.	Value.	Bars, 1830
Antimony		4.514	Coddington T. B.
Anvils		\$3.007	Sheets, bdls., 348 Carey & Moen
Antimony ore		683	
Brass goods,	35	4.658	
Bismuth	. 2	939	Sheet bdls., 9
Bronzes		1.401	
Chains and anchors	68	4,005	Pig. tons, 1038
Clocks		9,020	
Copper		96.5	CARL COLLEGE STORY &
Cutlery		42,707	Gibbon & Co.
Gas fixtures		582	Wire, pkgs, 2
Juns			Hayward, Perry &
Hardware		38 225	Francklyn
		1,246	Bars, 1200
Iron, pig, tons		120,548	Hill Edward
ron, sheet, tons		3,593	Oxide, cks., 15
R. R. bars		24,123	Irwin Richard & Co.
ron ore, tons		10,300	Pig, tons, 200
Iron, other, tous		39,280	Iron Clad Mfg. Co.
Lead, pigs		5.100	Blanks, cs., 401
Machinery		34,866	Blanks, bales, 102
Metal goods		24.312	Scrap, cask, 1
Nails		6,001	Knoblauch & Lichter
Needles		5,520	stein.
Nickel	27	6,675	Wire rods, bdls., rr;
Old metal	****	517	Lalance & Grosjean.
Platina	3	2,452	Bundles, 488
Plated ware	2	50	Lee Jas. & Co.
ercussion caps	3	677	Pig. tons, 200
Pins	17	2,233	Lundberg Gust.
Quicksilver	250	7,208	Bars, 10,237
Saddlery	33	4,380	Bundles, 1187
dee	45,920	118,325	Marvel W. D.
teel pens	6	4,001	Ore, tons, 300
iteel blooms	21.860	125,187	Mason John W. & Co.
pelter, lbs	265,525	0,645	Wire rope, coils, 32
ilverware	0	2.242	McCoy & Sanders
Nn, bxs	28.158	205,165	Sheet iron, bdis., 22
in, slabs, 500 lbs	50,703	13.151	Moors J. B. & Co.
VIPO	430	5,608	Pig, tons, 250
line, lbs	83,206	3,595	Morton, Bliss & Co.
The quantity of leading ar	ticles con	upares	Rails, pcs., o4 N. Y. Nat, Bk. Asso.
with previous dates as follows			
her bearing and and tollows	*		Hoops, bdls., 10,200

	For the week.	30 weeks	Same time
Jutlery, pkgs	197	4 314	4,068
lardware. pkgs.	25	620	651
ron, R. R. bers	2,490	76,800	230,094
lead, pigs	1,2,7	38,675	24.738
steel, pkgs	45,029	1,204,626	587,361
l'in, boxes	71,152	1.338.348	878,349
l'in slabs, lbs.	56,701	9,980,110	8,968,988

EXPORTS OF SPECIE.

Total Previously r	eported.		 \$1,720,47
Total since a same time it same time in same time in same time in same time it same time time it same time time time time time time time ti	1 1881 1 1880 1 1879 1 1877 1 1875 1 1874 1 1873		 40.571.03 6,787.75 5,082,37 11.682,09 9,305.95 21,349.81 38.201.32 61,036.90 36.976.00 38.316.78 54,861,03
EX		CLUSIVE O	

For the week ended August 1:

Total Prev. reported.	1880. \$8,628,199 224,865,632		
Since Jan	\$233,493,831	\$221,010,081	\$187,844.27
	-		

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending August 2, 1882 :

N. J. Metal Ex. Co. N. J. Metal Ex. Co.
Fish plates, 223
Naylor, Benzon & Co.
Bars, 440
N. Y. Nat. Bk. Asso.
Hoops, bdls., 100
Gden & Wallace
Bars, 213
Sheets, 119
Rivets, kegs, 9
Pierson & Co.
Sheet iron, bdls., 609
Perkins & Choate,
Spiegel, Ct., 500
Rawson H. B.
Anchor, 1
Stobo Robert,
Pig. tons, 400 Hardware. Armstrong & Co. Cutlery and gun pkgs., 94 omfield J. C. & Co. Pasid J. C.
Rollers, 3
Rollers, 3
Castings, 8
Shaft, 1
Machinery, C3., 7
Brown Wm
Package, 1
Carter W. C.
Mach'y, pkgs., 10
Noper, Jones & Cad-Cooper, Jones & Cau-bury, Mach'y, cs., 10 Downing, Sheldon & Co. Pig, tons, 400 Whitney A. R. & Co. Tubes, 500

Downing, Sheldon Arms, cs., 20 Folsom H. & D. Arms, cs., 2 Field Altred & Co. Mdse., cs., 45 Godfrey C. 8, 500 son Jas. & Co. Willi Pig, tons, 200 Wood, Neighbor & Co. Rods, 259 Order, Wire rods, bdls ,6839 Godfrey C.
Arms, cs., 4
Graef Cutlery Co.
Cutlery, cs., 5
Hartley, Graham & Co.
Guns, cs., 7
Hildick A. H.
Anvils, 50
Vises, 25
Vises, cks., 4
Isaacs, Vought & Co.
Mach'y, pcs
pkgs, 5 Ore, tons, 3020 Spiegel, kg., \$93,750 Spiegel, tons, 704 Bundles, 12,318 Rods, 1168 Cotton ties, bdls. Adoo Coiled rod, bdls., 1503 Hoops, bdls., 6234 Plates, 122 Bars, 20 Angles, 8 Serap, tons, 218 Girders, 228 Sheet, bdls., 455

Mach'y, pcs pkgs., 61 Kernkamp Th. Kern Cutlery, King Henry, Cutlery, csc., z Cutlery, csc., z Steel. Abbott Jere, & Co.
Rods in coils, bdls.,
162
Cases, 20

Atham,
Co.
Mach'y, cs., 6
Merchanta Dis. Co.
Anvils, roo
Cutlery, cs., 4
Cask, 1
Morris L. W.
Oil stoves, cs., Baring Bros. & Co. Bessein Frods, 6: 5:56 Biake Bros. Bundies, 160 Brown Bros. & Co. Rods, pkgs., 325 Brown Wit. Packages, 178 Cohn M. Packages, 14 Morris L. W.
Oil stoves, CS., 7
Moore's Sons J. P.
Arms, CS., 43
Nat. Mfg, Co.
Mdse., CS., 57
Pratt & Farmer,
Ironware, CS., 57
Read, Holliday & Co.
Mach'y, CS., 10
Still, 1
Rosenstein Bros.
Mach'y, CS., 107
Schuyler & Duane,
Mdse., CS., 3
Schoverling, Daly &
Gales,
Gun barrels, CS., 14
Mdse, CS., 10
Squires H. C.
Guns, CS., 4
C.
Guns, CS., 4
C. Packages, 14 Drexel, Morgan & Co. Blooms, 4582 Duval H. R.

Bundles, 54 liars, 6 Cases, 19 Bands, 236 Friedmann & Co. Steelware, cs, 5 Lazard Bros, Bloom, pcs., 60 Moss F. W. Moss F. W.
Files, cks., 1
Bundles, 46
Bars, 43
N. Y. Central R. R.
Rails, 2239
Pierson & Co.
Bundles, 454
Steel Co. of Scotland,
Blooms, 406
The Greenman Spring
Co.
Mdse., pkgs., 2
Order, Arms, cs., 40 Packages, 3 Sussfeld, Lorch & Nordlinger, Cask, 1 Spellman W. B. The Kennedy Tobacco

Co. Knives, cs., 4
Von Cleff,
Mdse., pkgs., 17
Winchester Arms Co.
Mdse., cse., 18
Ward Alsine,
Mdse., cs., 8
Wolff Maria,
Machinery, cs., 10
Witte John G. & Bro.
Packages, 14
Wiebusch, Hilger & Co.
Cutlery, hdw., &c., Order, Old double-headed Arms for Canada, CS., 7 CS., 8 Forgings, 20 Bars, 63 Packages, 246 Bundles, 287 Bands, 185 Casks, 5 Rods, 7544 Bessem'r rods, bdls., Rails, 1003

Wells, Fargo & Co. Cases, 4 Order, Rivets, cs., 4 Boxes, 7

Iron.

Metats.
Aikman J. & Co.
Tin plates, bxs., 229
Bank of Montreal,
Tin plates, bxs , 534
Baring Bros. & Co. Boker Hermann & Co. Chains, cks., 74
Baring Bros. & Co.
Finished bars, 7146
Rough bars, 777
Bars, 2565
Brown Bros. & Co.

Tin plates, bx8, 534
Baring Bros. & Co.
Tin plates, bxs., 509
Brown Bros. & Co.
Antimony, cs., 10
Bond, Parsons & Co.
Antimony, cs., 10
Bond, Parsons & Co.
Tin plates, bxs., 525
Bohn, Mayer & Co.
Tin slabs, 550
Dickerson, Van Dusen & Co.
Antimony, cks., 17
Tin plates, bxs., 1289
Folsom H. & D.
Gun caps, cs., 2
Lannarche H. & Co.
Zinc, cks., 25
Moors J. B. & Co.
Spelter, plts., 4883
Moors J. B. & Co.
Spelter, plts., 2076
Montell F. T. & Son,
Old metal, pkgs., 7
Noyes, Smith & Co.
Gun caps, cs., 2
Pell H. W. S.
Zinc, pkgs., 2
Pflzer Chas. & Co. Sheets, bdls., 348 Carey & Moen Wire reds, bdls., 456 Sheet bdls., 20 Crocker Bros. Pig. tons, 1038 Gib T. Zinc, pkgs., 2 Pfizer Chas, & Co, Quicksilver, bottles

Blanks, bales, 102 Scrap, cask, 1 Knoblauch & Lichten-stein, Wire rods, bdls., 1171 Lalance & Grosjean, Bundles, 488 Lee Jas. & Co. Pig. tons, 300 Lundberg Gust, Bars, 10,237 Phelps, Dodge & Co, Tin plates, bxs., 8:85 Tin and terne, bxs., Rankin J. Copper, drums, 4 Wilson's Sons John, Zinc, pkgs., 8 Order,

Tin plts., boxes, 8004 Tin, bdls., 2 Tin and terne, bxs., Thi and terne, DSS., 3117 Old metal, pkgs., 3 Copper caps. cs., 40 Spelter, ingots, 1200 Spelter plts., 11.429 Tin, slabs, 2025 Tin, ingots, 660 Antimony, cks., 75 Metal, pigs., 40 Lead, pigs, 40

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending August 1, 1882:

,961 1,545 275 1,535

300 2,684 140 4,771

Han burg.

Quan. Val. Sew. ma., cse. x \$200 Mf. irou, pge x x23 British North Amer-ican Colonics. Mach'y, pkge. r 122 l tlm., gals., 14,961 1,54 I, ore, tons., 275 1,53 Sew. ma., cs... Clocks, bxs... Pumps, pkgs. St. Loubes. Ptlm., gals.304,178 21,733 Bremen. Cuba. Pumps, pkgs. 5 226 Ag. mp.pkgs 3 136 Mach'y. pkgs. 4 3,150 Mf. iron, pkgs. 9 347 Hdw., pgs... 136 2,536 Met. packing, Iton, pkgs... 29 Hdw., pkgs... 183 Mf, iron, pgs. 213 Pumps, pkgs. 7 Boiler 1 Pins, pkge. 1 214 case .. Ag. imp., pgs.
Ag. imp., pgs.
Bellows, pgs.
Iron bars.....
T hoops, sets.
Sew. ma., cs.
Wire, rolls... Stockholm. Ptlm., gals.204,400 15,000 Stettin. Ptlm., gals. 195,967 14,500 Furnace mtl.,
pkgs..... 50 1,440
Plumes, cse... 1 83
Ptlm., gals, 179,446 16,380
Nails, pkgs... 18 127 ice mtl.,

Pumps, pkgs. Chain, pkgs... Sew. ma., cs.. Ptlm , gals 179,436 16,386 Nails , pkgs ... 18 177 Mach'y , pkgs .. 1525 79,634 Nails , kegs ... 160 Clocks , pkgs ... 8 492 Mf, steel , pgs 5 300 Cutlery , cs ... 2 40 Spikes, kegs ... 254 Buckles, cs ... 1 36 Mf. cop., pgs ... 16 2,303 Iron safes ... 4 309 W, mills, cs... Mach'y, pkgs. Amsterdam. 50 1,750 447 226 178 Mf. iron, pgs. 2 Buckles, cse.. Mf. cop., pgs. Iron safes... Pumps, pkgs. Locomotive.. Ag. imp.,pkgs 13 Agl.imp.,pkgs 7 Clocks, pkgs... 7

Rotterdam.

Antwerp. Ptlm., gals.350,015 24,125 Swords, bxs.. 9 150 Clocks, box... x 12 Canary Islands. Saws, cs..... Pumps, pkgs. Revolvers, cse Guns, cse.... 1 49 Hdw., pkgs... 75 887 Revolvers, cse i Sew. ma., cs. 3t Ptlm., gals...12,050 Hdw., pkgs... 43 Ag. imp., pkgs 45 Mt. iron, pkgs 2 Cartridges, cse 1 Dutch East Indies. Ptm., gals.968,210 206,903 Nordkoping, Sweden Ptlm., gals..40,400 3,000 Naph.,gals..18,750 1,200 Japan.

Napn.,gais...15,750 1,200

Elsinors.

Ptlm., gais.224,267 15,600 Hdw., pkgs... 15 Hull. Hong Kong. Hdw., pkgs... 9 Mf. iron, pgs. 27 Ptlm., gals.328,800 Ag. imp., pgs. 8 561 Mach'y, pkgs. 3 565 Hdw., pgs... 116 2,671 Clocks, pkgs... 3 428 Porto Rico. Liverpool.

Liverpool.
Clocks, bxs... 41
Hdw., pkgs... 46
Pumps, pkge... x
Mf. iron, pgs. 2
Revolvers, cse. x
Sew. ma., cs... 75
Ag. imp., pgs 127
Mach'y, pkgs. 7
Clocks, pkgs... 14
Nails, bxs... 560
Stmpdware, cs. 10 Ptm., gals...20,142 Sew. ma., cs... Ag. imp., pgs. Scales Scales
Iron, pkgs
Brss, g'ds., cs.
Mach'y, pkgs.
Hdw., pkgs.
Mf. iron, pkgs
Metal, cs. 1,224 2,250 225 305 1,800 Clocks, pgs. Exmouth. Veneruela.

Mach'y, cs... 3 Petm. gals ... 1400 Mf. iron, cse . 1 London. Loradon.

Sew. ma., Cs.1442 10,203
Mach'y, pkg8. 154 25,720
L rollers, Cs. 12 420
Car wheels... 100 630
Hdw., pkg8... 72 1,376
Windmills... 17 787
Ag. imp., pkg8. 56 1,405
Clocks, pkg8... 128 3,032
Ptlm., gais.773,750 63,354
Pumps, pkg8. 10 500
Valves, Cs... 35 1,565 Salonica. Ptlm., gals.135,450 14.00 Smyrna. Pumps, box .. 1 Mexico. Ptlm., gals. 12,550
Iron safe... 1
W. closet... 2
Pumps, pkgs. 17
Hdw., pkgs... 160 British Possessions in Africa.

Clocks, pgs... Saws, cse.... Trieste. Ptlm., gals.416,862 69,65

Havre. Pumps, pgs. 12 650 Sew. ma., cs... 672 9,243 Ag. imp.,pkgs 17 1,332 Naph., gis. 17,490 8,530 Hdw.,pkgs... 2 15,00 Wire gds., cs. 24 60 Copper, cks... 180 40,500 Ptlm., gals. 235,102 15,728 British East Indies. Ptlm., gals. 525,000 57,750 New Zealand. Hdw., pgs... 892 15,028 Ag. imp., pgs.. 351 7 972 Mf. iron, pkgs 590 6,607 Pumps, pkgs. 15 691 Clocks, bxs... 31 595 Pilm., gal. 10,080 1,520 Nails, kegs... 38 140 Bordeaux. Pilm., gal. 10,080
Nails, kegs... 38
Tacks, cs... 2
Mach'y, pkgs. 19
Nails, pkgs... 69
Wringers, cs. 6
Sew. ma., cs... 11
Saws, cs.... 6 38 2,174 343 140 210 W. mills, cs. 27 Hdw., pkgs. 7 Mf. iron, pkgs 10 Stpd. wre.,cs. 4 Marseilles.

Clocks, cs.... 5 Cette. Genoa. Ptlm., gals.271,210 19,177 Hdw., pkgs... 9 Sew. ma., cs.. 72 Rouen. Ptlm., gals.295,446 20,762 Barcelona. Firearms, cso 1 British West Indies. Ptlm., gals. 21,706 2,488
Naiis, kegs... 17 67
Wh 'lbarrows,
pkge... 1 13
Ag, imp., pkgs. 3 128
Hdw., pkgs. 39 815
Mf, iron, pkgs 22 320
Br, goods, cae x 10
Tacks, pkgs... 13 342
Clocks, pkgs... 13 342
Iron safe... 1 85
sew.ma., cs... 7 82
pumps, pkgs. 23 34 Sew. ma., cm.. 11 1,526 Africa. Pumps, pkge. 1 Hdw., cs..... 11 Iron safe.... 1 Ptlm., gals....1220 Br. kettles,ck 3 Hayti. Ptlm., gals. ..5041 Br. goods, ese 1 Ptlm, gals. . 5041
Br. goods, ese 1
Mf. iron, pkgs 17
Nails, bxs. . . 72
Chain, ese 1
Anchors 13
Nails, kegs 64
Cutlery, es. . 4
Hdw., pkgs 15
Shot, pkgs 8
Iron safe. . 8 Pumps, pkgs. Nails, bxs.... Wire rope,coll Cork. Ptlm., gals 125,520 9,00

Glasgow. Brazil. Ptlm., gals. .88,000 Hdw., pkgs... 120 Mach'y, pkgs. 30 Pumps, pkgs. 2

COAL.

Within the past week most of the Anthracite Coal companies have advanced their prices 10¢ @ 15¢ & ton. The Pennsylvania Coal Company only adds the former rate, and excludes from its operation the two furnace sizes, Steam and Pea. The Lehigh companies have decided nothing, but leave companies have decided nonling, but leave inquiring minds to infer that an advance for August is possible. Perhaps they first wish to learn from others in the trade how far the advance on paper is realized in cash. The fact is that if Coal supplies at the present rate of production run short, the advance will be obtained; if otherwise, it will not. There is a fair business in progress, but the spurt that preceded Aug. I has died little or no business is being done on a basis away. The prices announced by the Delaware and Hudson Coal Company are as fol-

lows: Furnace Lump and Steamer Lump, \$4.15 each; Grate and Egg. \$4.30 each; Stove, \$4.45; Chestnut, \$4.50, and Pea, \$3.15.

The following is the circular of Eastern prices issued by the Philadelphia and Reading Coal and Iron Company: The price of Lump and Steamboat at Port Richmond dur-Lump and Steamboat at Port Richmond during August will be \$4.75, an advance of 10¢; Broken, Egg and Stove, \$4.15; Chestnut, \$3.95, an advance of 15¢, and Pea, \$2.80. The prices at Elizabethport, N. J., will be \$5.15 for Lump and Steamboat; \$4.50 for Broken, Egg and Stove; \$4.30 for Chestnut, and \$3.15 for Pea.

The Bituminous trade is slacking up a little, and some Coal has been sold at \$4.25 f. o. b., but in no large amount. The Consolidated Company has sent a third gang of new men into the Cumberland region, and the old hands are more disposed to negotiate.

new men into the Cumberland region, and the old hands are more disposed to negotiate. They are sending a few barge loads to New York, all for the Inman steamers. Clearfield is doing a fair business. Eastern freights are unchanged.

The total tonnage of Anthracite Coal from all the regions for the week ending July 22, as reported by the several carrying companies, amounted to 68,1,030 tons, against 646,007 tons in the corresponding week last year. The total amount of Anthracite mined for the year is 14,654,903 tons, against 14,104,036 tons for the same period last year. The quantity of Bituminous Coal sent to market for the week amounted to 59,200 tons, against 101,807 tons in corresponding tons, against 101,897 tons in corresponding week last year. The total amount of Bituminous mined for the year is 2,303,992 tons, against 2,686,976 tons for the corresponding period last year.

PHILADELPHIA.

Office of The Iron Age, 22c South Fourth st., Philadelphia, Aug. 1, 1882.

The market during the past week has been very quiet and uninteresting. Taking the entire list there is no transaction calling for special remark. July has not developed any new features in the situation. Prices are quotably unchanged, although some arti-cles are bringing medium and lower prices, which a month ago sold at outside figures, which a month ago sold at outside figures. The trade generally are very hopeful regarding the future, and it is pretty generally believed that between this and September business will show an improved activity.

Pig Iron .- The tone of the market continues firm. Quotations are not materially higher, but the majority of sales appear to be at outside figures. The heavy consumptive demand shows no abatement. Furnaces for the most part are under contracts which will keep them fully employed for some time to come. Any lots of well-known brands that are available for prompt shipment very read-ily find buyers at a slight advance on outside quotations. Such lots, however, are somequotations. Such lots, however, are some-what scarce, and buyers experience difficul-ty in placing orders for anything like prompt shipment. A fair week's business has been effected, and orders for 50 and 100 ton lots have been rather freely placed. Besides these we have heard of a few 500 and 1000 ton contracts being taken. Quite a number of consumers think it wise policy to buy more largely than they have done for some months past, and in consequence have placed orders for fairly large lots. Others hold back and buy in much smaller lots. Although orders for fairly large lots. Others hold back and buy in much smaller lots. Although many still adhere to the "hand-to-mouth" system of purchasing, sales during July have been of a somewhat heavier character than those of June. No. 3 Foundry continues slightly irregular, and concessions of more or less importance are made in order to effect less importance are made in order to effect business. Gray Forge is in demand, especially brands of known quality, and we have heard of one or two sales of 1000 tons at about full quotations. We quote as follows: Gray Forge, \$20 @ \$21, at furnace; No. 2 Foundry, \$22; No. 1 Foundry, \$23.50 @ \$25. One or two parties are speaking of higher prices, but the general tone of the market is simply steady and firm.

simply steady and firm. Foreign Iron.—Bessemer Pig is without animation, and buyers are not at all inclined animation, and objers are not at all inclined to come into the market at present, although sellors are offering very good inducements. There is very little inquiry, and so far as we can trace, no transactions have been effected—\$24.75 is quoted, but one party claims to be able to sell at about a dollar per ton less shipment during any part of the next five months. The above remarks cover Speigeleisen, which is quoted, \$36.75 for 20 %. A small lot of No. 1 Eglinton was sold at \$24.25,

the market is fairly steady, the tendency appears to be toward lower figures, and desirable orders could be placed at about \$42 at mill. The average selling price for good brands is £42.50; however, we repeat former quotations, \$42 to \$43 at mill.

but they will not meet the demands of the Amalgamated Association; they will stand by the other mills until the end. The policy of the Amalgamated Association in starting up a number of mills west of

Blooms .- The demand is fair, with supsomewhat lower and sales have been made at the following: Charcoal Blooms, \$70; Run-out Anthracite, \$60; Scrap Blooms, \$52.50, and Northern Ore Blooms, \$47.50 @

Bar Iron.—The demand for small and average sized lots is good, but beyond this very little is doing; now and again a fairly large sale is reported, but these are few and far between. Buyers generally are not inclined to buy heavily just now, and are buying quantities sufficient to meet their present and near-by wants. The mills appear to have about as much as they care for at this season, and some few manufacturers report business in hand which will keep them fully The fact is that if Coal supplies at the present rate of production run short, the advance will be obtained; if otherwise, it will not. There is a fair business in process that it coals are supplies at the present rate of production run short, the advance will be obtained; if otherwise, it will not. There is a fair business in process that it can be supplied to be weak and irregular: 2.6¢ is the

mill. Some are of opinion that the irregularity in prices is only temporary, and that when the fall trade opens we shall have a return to steady prices.

Structural Iron—Is very firm and steady; orders for a few hundred tons each have been placed rather freely, and the mills are fully employed. Heavy orders are very scarce, the bulk of business being for small conductions are represented. and average lots. Indications point to a steady demand, and manufacturers anticisteady demand, and manufacturers anticipate a good business during the balance of the year. We continue former quotations: Angles, 2.9¢ @ 3¢; Tees, 3.75¢ @ 3.87½¢; Beams, 4¢, and Channels, 4.2¢.

Plate and Tank Iron .- Owing to the Plate and Tank Iron.—Owing to the inability of manufacturers to take orders for prompt delivery, inquiries have fallen off. There is nothing new in the situation to note, the mills being fully employed on contracts booked previous to date. Prices are nominally: Tank, 3.3% @ 3.5%; Shell, 4%; Flange, 5%, and Fire-box, 6%.

Sheet Iron. - The activity shows no Sheet Iron. — The activity shows no abatement, and prices are very firm with a decided upward tendency, and it is not improbable that prices may advance a little during the course of the next few weeks. Some buyers have been holding off in the expectation of lower prices, but under the present heavy consumptive demand (which is likely to be heavier toward the end of the propath) it is difficult to see how prices conmonth) it is difficult to see how prices can decline under these circumstances. We quote as follows:

Common Sheet, No 27 and 285.25.
Common Sheet, No. 20.
Common Sheet, No. 22 to 254.7.8
Common Sheet, No. 16 to 21
Best Renned 1/6 advance on the above.
Best Bloom Sheets. No. 26 to 28 72
Best Bloom Sheets, No. 22 to 25
Best Bloom Sheets, No. 16 to 21
Common Red Plates, 3-16 to 16
Blue Annealed, 3-16 to 16
Rest Bloom Galvanized, discount
Second quality, discount 40 %
Steel Dalle A fair

Steel Rails .- A fair amount of busine has been effected during the week, ders are not of such a size as to call for any ders are not of such a size as to call for any special remark. There is a little more inquiry for late delivery, and for such \$47 at mill is quoted. It is believed, however, that a desirable order could be placed at somewhat lower figures. For average section and immediate delivery we quote \$49 @ \$50 at mill.

Iron Rails .- There is some inquiry, but we have not heard of any large sales. Some business has been done at \$45 @ \$48 at mill.

Wronght Iron Pipe-Is very active and steady—prices have an advancing tendency; Ga. and Steam Pipe are quoted higher. The mills are running to their fullest capacity, and manufacturers are not disposed to contract for anything like late delivery we heard of a large order being refused.
The demand is likely to be more active. We quote, Boiler Tubes, 45 @ 47½ % off; Gas and Steam Pipe, 57½ % off. To a desirable buyer these prices might be shaded somewhat.

Nails.-The demand continues very ac-Prices are firm and show an upward ney. We quote, \$3.40 ? keg. tive. Pric

Old Rails.—There are no spot lots in this narket. There have been inquiries for about half a dozen fair sized lots. We quote \$26 @ \$27 for Tees, but it is said that if there were any lots here they would readily sell at about \$27.50. We quote Double Heads \$28

(@ \$28.25. Crop Ends.—There have been some in-quiries, and \$23.75 was quoted for a 500-ton lot, f. o. b., New York; 1000 tons are of-fered at £3, f. o. b., shipping port, August shipment, but buyers are very slow.

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, 1 PITTSBURGH, PA., Aug 1, 1882.

Eight weeks ago to-day the Iron lock-out was inaugurated, and while, o? course, it is that much nearer the end, the prospect at present is not favorable for an immediate termination of the strike. The manufacturers, with but few exceptions, are just as determined as ever, and while some of the small lot of No. I Eglinton was sold at \$24.25, Philadelphia. There was also an inquiry for about 200 tons, which was placed in New York Market at something less than \$24.25 — believed to be about \$24. A large lot of mixed Scotch Pig is offered at \$22 in store, low the example set by the Cleveland Rolling less consider this too high. Muck Bars.—The demand is steady and even, and several orders for 100 tons have been placed during the week. Quotations are unchanged, but buyers claim that \$43 at mill is the shigh in proportion to the week. mill is too high in proportion to the weak up, and it is very important for the Pipe state of the Finished Iron Market. While mills to start up as soon as possible, as they are losing trade every day they remain idle but they will not meet the demands of the ing up a number of mills west of Pittsburgh, on a basis of the Cincin ply about equal to consumption. Prices are nati agreement, viz., that the matter somewhat lower and sales have been made of wages is to be decided by Pittsburgh, has iled our mill owners somewhat, who, while they regard it as an indication of weakness, look upon it as an act of discrimination against Pittsburgh by centering the fight here. And we may add that this has caused some mill owners to favor the project of starting up with non-union workers who, otherwise, would have opposed it. At present there are 29 iron and steel mills in operation here and west of Pittsburgh, 13 of which are being operated by non-union men; of the remaining 16 a few signed the scale outright, but the majority are working under the Cincinnati agreement, the wages paid to be the same as agreed upon at Pittsburgh. The above is a brief summary of the situation here and west of Pittsburgh at the present

mills start up. With so many of the furnaces out of blast the stock in first hands is by no means large, and mill yards with few excep-tions are bare, hence the belief in higher tions are bare, hence the benefit in light prices as soon as business starts up. As compared with a week ago, prices remain unchanged. Foundry grades, \$22 @ \$23 for No. 2, and \$24 @ \$25 for No. 1. Sales of Mill Iron for foundry use at \$23 @ \$23.50. Sales of Bessemer since our last at \$25.50 @ \$26, 4 mes., which is from \$2 @ \$2.50 per ton less than the best brands of English can be laid down here from the seaboard. Sale of Southern Cold Blast Charcoal at \$32.50, cash; best brands of Eastern quoted at \$36, cash, Hanging Rock at \$38.

Muck Bar .- There is an increasing demand, and prices are firmer. Sale of 400 tons at \$40, cash, delivered. Some holders are asking \$41 @ \$41.50. There is a fair stock here, but not much for sale.

Nails.—Manufacturers report that orders are very light, but this may be accounted for by the fact that buyers know that it is useless to order, as there is no stock. The fall trade usually opens up this month, and no doubt the factories, if running, would have all they could do. An order for less than a car-load was recently sent from here to Wheeling, and it was with difficulty that. to Wheeling, and it was with difficulty that it was filled by four different factories there. Prices are still quoted at \$3.60, net cash, to jobbers, and \$3.75 in a retail way. Our latest advices from Chicago and Milwaukee quote at \$4. The Western Nail Association does not meet until October, unless a special

Pig Iron.—There is no change worth meeting is called.

Manufactured Iron.-Stocks here are so much reduced and broken that it is almost impossible to execute an assorted order, most impossible to execute an assorted order, and this will continue to be the situation until the mills start up. For some kinds of Iron, particularly Skelp Boiler Plate and Tank, there is considerable inquiry, and considerable quantities have been purchased at competing points, both East and West. Manufacturers of agricultural implements are usually in the market this month for large lots, and unless our mills start up before long these buyers will have to look elsewhere. There are no regular prices, hence it is, in the present condition of affairs, useless to attempt quotations.

Wrought Iron Pipe.—There is an increasing demand. The Pipe mills, if running, would have all they could do, and the owners thereof, as stated elsewhere, are getting restless, as might be expected, with their mills standing cold and their trade go-ing elsewhere. They feel a good deal soured at the Eastern manufacturers, who, they claim, have been taking advantage of the strike in the West, and instead of giving a helping hand have been working to secure the trade of their Western competitors. the trade of their Western competitors. Prices are higher, with a very small and badly broken stock in this market; we reduce discounts to 57½ % on small and 60% on large sizes of Gas and Steam Pipe. Boiler Tubes are still quoted at 42½ to 45% off. Oil Well Casing, still quoted at 65¢ @ 67½¢ per foot, net, and Tubing, at 20¢, with but little inquire.

Old Rails.-We hear of a purchase of some 800 tons double heads at New York on Pittsburgh's account as equal to \$31 delivered here. American Tees would bring \$27 here, but there appear to be no sellers at that figure; lots on the market at Chicago at

Steel Rails.-No recent sales reported ; in the absence of which we continue to quote at \$48 @ \$50, free on cars in Pittsburgh; Railway Spikes remain unchanged at \$3 @

\$3.15 per keg, 30 days. Steel.—There is an increasing business, as there usually is at this season, and the indications are promising for a good fall trade. No change in prices. It is probable the old Ross Street mill, so many years operated by Anderson & Co., will shortly be started up under new auspices.

Window Glass.—Business, although improving, is still backward for the season, prospect, however, is very favorable. No change in prices.

CHICAGO

Office of The Iron Age, 36 and 38 Clark Street, oor. Lake Street, CHICAGO, JULY 31, 1882.

Hardware.-We have no change to report regarding this market since our last, the demand for shelf hardware and all seasonable goods being fair.

Manufactured Iron .- As previously reported, the market continues to have a quiet tendency, with very little outside demand, and stocks considerably broken. We quote: Bar, 2.80¢ @ 3¢; Angle, 4¢; T, 4½¢; Beams and Channels, 4½¢@ 4½¢; Hoop at 4¢; Sheet, Plate and Tank, 10 to 14 gauge, 4¢; 15 to 17 ditto, 4.30¢; 18 to 21 ditto, 4.60¢; 22 to 24 ditto, 4.80¢; 25 to 26 ditto, 5¢, and 27 ditto, 2.50¢. Patent Cold-rolled Shafting, discover; Norway Iron, Original Bars, 5¢ rates; mand, and stocks considerably broken. 5.20c. Fatent Cold-rolled Shafting, dis. 20 %; Norway Iron, Original Bars, 5¢ rates; Norway Iron, re-rolled, 6¢ rates; Ulster Iron, 4½¢ rates; Low Moor Iron, 8¢ rates; Nuts and Washers, 7½¢ off list; Wrought Boat Spikes, 3½¢ rates.

Steel.-No new features are to be noted in this market, the cheaper grades of Steel are probably a trifle finer in tone than heretofore. We quote: Tool, 12¢; Machinery, O. H., 5½¢; Crucible Machinery, 7¢; Hammer, 2 inches and under, 8¢; over 2 inches, r, 2 inches and under, 8¢; over 2 inches, Cast Spring, 7¢, and O. H. Spring, Tire Sleigh Shoe, 5¢. Sheet, first, second and quote round lots for cash as below: third quality, 12¢, 10½¢ and 8½¢, respectively; Crucible Plow, 6¾¢; Eagle Plow, 5½¢; Iron Center Plow, 10¾¢, and soft Steel Center Plow, 10¾¢.

Pig Iron.-A repetition of our last report would fairly represent the condition of this market at this date, Charcoal Iron showing a slight improvement, and soft Irons fairly strong, as is also Imported Scotch. The demand for all kinds of Pig Iron has been a trifle better than at our last writing. We quote: Lake Superior Charcoal, Nos. 1 and , \$27, 4 mos.; No. 3, \$28.50, ditto; and Nos. , 5 an: 6, \$28.50, ditto; Calumet, \$25.50 &26; Briar Hill, \$26.50; Silvery Soft, \$24 & \$26; Crane, No. 1, \$28; I/o. 2, \$27; Him-od, \$25.50; Thomas, \$28 @ \$29; Imperted Scotch, \$29 @ \$31, and American Scotch

Scrap Iron—Has been in moderately fair request during the past week. We quote (dealers' purchasing prices, which are nominal): No. 1 Wrought Scrap, \$21, netton; nai): No. 1 Wrought Scrap, \$21, netton;
No. 1 Railroad Scrap, \$22@\$23; ditto Heavy
Cast, \$18; ditto Stove Plate, \$12; ditto
Cast-iron Borings, \$8 @ \$9, and ditto
Machine-shop Turnings, \$11 @ \$12.

CHATTANOOGA.

Office of The Iron Age. Market and 8th Sts., { CHATTANOODA, July 31, 1882. } Business generally has been rather dull during the week. The weather continues decidedly cool for the season, especially the

Pig Iron.—There is no change worth noting in crude Metals. The better feeling which showed itself in furnace and mill circles continues. Holders are firm in their cles continues. Holders are firm in their views, and buyers are coming forward with views, and buyers are coming forward with liberal orders. Chattanooga Iron Company have completed their repairs, and blew in their furnace on the 28th. They expect an output of about 350 tons per week. We quote: No. 1 Foundry, \$24 @ \$25; No. 2 Foundry, \$22 @ \$23; Gray Forge, \$20 @ \$21; White and Mottled, \$19 @ \$20; Car-wheel Metal,

Ures.—We quote: 50 % Brown Hematite, 3 ton, \$2 @ \$2.75; Red Fossil, \$2 @ \$2.25, delivered at furnace

Miscellaneous Articles .- Old Rails are steady at about \$25. Scraps are a little better than at last report. We quote Wrought at \$23; Cast Scrap, \$13 @ \$15; Old Wheels, \$28 @ \$29.

Nails-Are strong at \$3.40 for large bills. Small orders are filled at about \$3.60 from stores. Mills are on full capacity, and have plenty of orders in sight.

Manufactured Iron.—Bar is fairly strong at \$2.50 for round lots. Orders are increasing. The raid on the market for track fixtures did not amount to much, nor seriously affect standard articles. We quote: Railroad Spikes, \$3.40; Track Bolts, \$4; Fish Plate, \$3

Coal.—We quote: Fancy Lump, \$2.50 Common, \$2; Run of Mine, \$1.50, at mills. Coke,-We quote: Furnace Coke, \$3 at nt of consumption ; Foundry, 10¢ @ 12¢ 2 bushel.

Steel and Iron Rails .- Steel Bars, \$50; mall T, \$50 @ \$53.

CINCINNATI.

JULY 31 .- Pig Iron .- The market shows decided firmness in prices and a steady de-mand from consumers; many of them are seeking to place orders for delivery through the year; in most cases these wishes are being responded to by the Pig Iron makers. The current consumption is about equal to the output of furnaces that find a market in this region. The sales of the past week were at prices covered by following quota-tions: Best No. 1 Hanging Rock Charcoal Foundry Iron, \$28 @ \$28.50; good, \$27 @ \$28; Tennessee and Alabama, \$25.50 @ \$26; Anderson & Co., will shortly be started up ander new auspices.

Scrap.—Wrought Scrap is still quoted at \$27 @ \$28 P net ton; Old Car Axles, for which there is a good deal of inquiry and hard to get, \$38 @ \$40; Wrought Turnings, \$20 @ \$22. The last sale of Old Car Wheels reported was at \$27.50, time, and Cast Borings at \$15, cash; Crop Ends are quoted at \$27, but the last sale reported was light local demand in limited quantity, but firm prices as quoted last week.

*28 Tennessee and Alabama, \$25,50 @ \$26;
No. 1 Coke, Hanging Rock, \$24,50 @ \$24.50 (No. 2, \$1 less. No. 1 Coke, Hanging Rock, \$24,50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.60 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$1 less. No. 1, \$22.50 @ \$24.50 (No. 2, \$24.50 @ \$24.50 @ \$24.50 (No. 2, \$24.50 @ \$24.50 firm prices as quoted last week.

LOUISVILLE.

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 117 and 121 West Main Merchants, Nos. 117 and 121 West Main street, report to us as follows, under date of July 29: The market for Bar Iron is still end first there is no pressure either to guide and first there is no pressure either to sealer of the early portion of last week, we not last week, with a large speculative wather of the early portion of last week were held last week—on Tuesday at Middlesboro', on Wednesday at Wolverhampton, and on Thursday at Birmingham. The Middlesboro' market is firm, but with business there are hopes that the guantities, but no Hoop.

Light Sheet, Bar and Band are made in large quantities, but no Hoop.

Light Sheet, Bar and Band are made in large quantities, but no Hoop.

Light Sheet, Bar and Band are made in large quantities, but no Hoop.

Light Sheet week with the city of Alexandria will be found to cover most of the actual damage. If the whole of Egypt per se, would be offer when he of Egypt per se, would be or easely and there was a week new them. Odd sizes are sought for eagerly, and many have been taken from here, we learn, for the Cincinnati market. The jobbing price ranges from \$3.75 to \$4.1 keep to the common of the Cincinnati market. The jobbing price ranges from \$3.75 to \$4.1 keep to the common of the comm Coke,—Business, while light, as compared with what is was before the strike, is all that can be expected under existing circumstances. No change in prices, which are still quoted at \$1.35 \ \frac{1}{2}\) ton in a regular way, on cars at ovens, and \$1.50 \(\emptyre{0}\) \$81.60 for small properties.

tinues active for all grades of Hot-blast Irons. Censiderable sales are made both for present

FOUNDRY IRONS.

23.00 (0)	
23.03 00	24,00
 22.00 @	22.50
 20.50 0	21,50
	20.50 🕊

CAR WHEEL IRONS.

Hanging Rock.	Cold-blast W. B	27,00	
Cold-blast	Georgia, Warm and ky, Cold-blast	30.00	

NEW ORLEANS.

JULY 29, 1882.—Hardware.—The market during the week just closing has been with animation, although seasonable goods have been in fair demand. Nails are selling freely at \$3,85 for 10d to 60d. There are a good many inquiries for carload lots, but with the broken stocks in hands of jobbers, it is diffi-cult to buy in such quantities. Bar Iron.— Prices are unchanged. We quote: 2.90¢ @ Prices are unchanged. We quote: 2.90¢ @ 3¢ basis. Sheet Iron.—Common, 10 to 14, 4¢; 15 to 17, 4¼¢; 18 to 22, 4½¢. Pig Iron.—American Foundry, No. 1, \$26; No. 2, \$25. Wrought Iron Pipe.—The demand is good, and prices firm at 60 @ 62½ % discount; Boiler Tubes, 45 @ 47½ %. Copper.—Braziers, 30¢; Sheathing, 28¢; Bolt, 30¢; Yellow Mctal Sheathing, 20¢. Zinc.—Sheet, 7¼¢ @ 8¢.

ST. LOUIS.

Messrs. Hoffer, Plumb & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, report to us as fellows, under date of July 29: The condition of this market remain unchanged in its general features. There some little business doing, but not enough to warrant a more generous report. We con-tinue quotations, which represent the nominal ondition of the market very fairly :

HOT BLAST CHARCOAL. outhern. COAL AND COKE. MILL IRONS. Red-short. Neutral.... CAR WHEEL AND MALLEABLE IRONS.

A remarkable instance of the development of electricity by friction has been brought to light in a Berlin brewery. The building is constructed of stone and iron, the floors being laid in asphaltum. A malt cleaning machine is located in the upper story of the malt house, and the cleaned malt is conducted down through an iron shute to wagons in the lower stories for distribution through the works. It has been found that if the malt cleaning machine remains in operation for a long time, this being of frequent occurrence, electricity is developed by the friction of the malt and the iron shute, and in the most iso-lated portions of it the tension of the elec-tricity is said to be such that sparks may be continuously observed. The malt crackles throughout, and sparks have been observed to fly from it to the hands of those in its immediate vicinity. The men at first thought that this was a demoniacal exhibition until an expert calmed their fears. This gentleman Mr. Nehrlich, brought the subject before the Electric Technical Union, and the resulting discussion brought forth statements from several members that this occurrence had been observed in several other breweries. Dr. Werner Siemens showed how, through the existence of asphaltum floors, the malt room is so insulated from other portions of the building that it resembles, in fact, a

(From our Regular Correspondent.) LONDON, ENG., July 17, 1882. THE OUTLOOK

manufactured Hardware are low, and these are bought freely by the merchants, but such as are held high by combination, as, for example, Screws and Locks, are touched lightly. River is low, and the packets that bring freight from Pittsburgh are laid up. chinery has been sent to the land of the Pharaohs, which has also been a buyer of hardware and sundries. For the time being for future deliveries, and other smelters were

the canal has caused some diversion of Aus- better call, at about £6. 5 , and bedstead

has not retrograded since I last wrote; indeed, it may be said to have gained somewhat in several departments, while in others the previous steadiness has been fully maintained. Had other conditions been more favorable, I ancy we might have had a distinct upware Possibly it may come but for the moment I incline to the belief that we may look forward to firmness with-out anything like a boom, unless a disturbing cause, such as large purchases on American account, should upset all our calculations. Of the probabilities in that direction you are likely to be much better informed that I can possibly be, so that if you perceive any in possibly be, so that if you perceive any increase of note in importations from this side, you may take the liberty of assuming that we are going "on up the line" once more. So far I am not in a position to actually note large American purchases here, but I do hear large American purchases here, but I do hear of a great many inquiries on your account, and I learn that your people are buying more freely of Scotch and Bessemer pig, Welsh bars, spiegeleisen, sheet iron, hoops, cotton ties, blooms, rails, and many kinds of hardwares, besides some few lots of old material and larger parcels of coke tinplates. These lots may be in anticipation of your fall trade, or they may have been secured owing to difficulties in your own market; in either case the facts are as I market; in either case the facts are as I have given them. Lower freights as the have given them. Lower freights as the scason advances may yet further stimulate the traffic. At Glasgow, as I write, the annual fair holidays are in progress and business is suspended. When the iron market ceased on Thursday last (July 6th), warrants took a sudden run upwards, and closed at 50/2, a distinct advance upon recent figures. Scotch makers' brands are also stiffer all sevend and some of the smalters are said to. Scotch makers' brands are also stiffer all round, and some of the smelters are said to be quite scarce of No. 3 iron. On that head I have no details, but I should not be suprised to find the statement perfectly correct. It would be more satisfactory, nevertheless, if our Glasgow friends could tell us how many tons of each brand there are in the stores of Connal & Co. That, I presume, to be impracticable, hence it must be counted out of the reckoning. It is further stated that some of the makers have no iron on hand, but we are not told which of the yards are in that enviable condition. On the whole, Scotch figures and prospects are more hopeful than for some time are more noperly than for some time past, and may become still more so, un-less the bulls become rampant and spoil the whole affair. The Cleveland smelt-ers are well employed and are begin-ning to do a little more with Scotland, as a consequence of the augmentation of values in that country. Some little commotion has been caused by the failure of Mr. C. E. Muller, of Middlesboro', with liabilities stated at £200,000. Mr. Muller is an iron merchant and shipowner, and is likewise interested in the Erimus Steel Works, which he recently acquired. He is the German Consul at Middlesboro', and has for many years carried on an extensive business there. Whether his suspension will affect other firms or not is not yet clear, but there are rumors that he owes various local houses sums ranging up to owes various local houses sums ranging up to £20,000 each. His stoppage is attributed to losses in the steel trade, as well as to unprofitable speculations in pig iron. On the West Coast the producers of hematite pigs are firm, report themselves nicely sold forward, and decline to sell beyond this month at current rates, which will be found in detail in another portion of this letter. Elsewhere view are seven where firm and there is where pigs are everywhere firm and there is a decided tendency to advance selling rates. No official change in that direction has been made, but most of the smelters are well en-gaged and refuse to bind themselves further, save on terms which will make themselves quite safe in the event of a general increase of quotations or of an enlarged volume of business at present figures. THE QUARTERLY MEETINGS vere held last week-on Tuesday at Mid-

irrigating, hematite pigs were quoted at £3. 7/6, and Tredegar at £3. 5/, delivered in South Staf-Messas. Geo. H. Hull & Co., Commission Merchants, report to us as follows, under date of July 28, 1882: The market confines extra first surface and sundres. For the time being for future deliveries, and other smelters were proportionately well engaged. The "list" was a fine city of 200,000 inhabitants, well houses made no change (as I anticipated would be the case), retaining £7. 10/ as the

singles, £13. 10 doubles, and £15 trebles, or "lattens." One sheet house—the Tividale Iron Company—having four months' work ahead, advanced prices by 10 a ton. Some United States orders for sheets were reported, and one firm-Hingley & Son, Netherton—spoke of orders from your side for bars and other sorts of rolled iron. Good boiler plates were to be had at £8 @ £10, according to brand. Fencing wire was steady, makers being reported well engaged.

Prior to the quarterly meeting at Birmingham the Galvanized Iron Trade Association held a meeting, at which the trade and its prospects were fully discussed. An "offiprospects were fully discussed. An "official" account of the proceedings states that it was found that there was plenty of work in hand, coupled with a general inability to deliver as rapidly as buyers wished, hence it was decided to advance prices to ?? ton, making the quotation for 22 and 24 W. G. in bundles in London, and other sorts in like ratio. like ratio.

THE TIN-PLATE MANUFACTURERS

also held the quarterly meeting of their trade association at Birmingham, under the presidency of Mr. F. W. Flower, of Neath. Positive and prospective matters were discussed, and we are told by some of the pa-pers that the situation was deemed so strong that it was decided to "recommend" an advance of 1/ $\frac{1}{12}$ box on I. C. ordinary cokes, thus advancing them to 17/, delivered at Liverpool. Deeming this "recommendation" curious and possibly equivocal, I have put who was present at the meeting, and who is an undoubted authority on everything connected with the tin-plate trade. Somewhat an undoubted authority on everything con-nected with the tin-plate trade. Somewhat singularly, he does not say a single word about the "recommendation" in the follow-ing account of the proceedings: "Tin plates were firm, and a considerable business took place. The recovery which has occurred in pig iron, and, still more, the upward movement in tin, induce buyers of tin plate to se-cure supplies at the present low rates. On the other hand, the shipments to the United States were large last month, and it is still too early for the fall trade. These (latter) considerations barred out speculative buying, and the business done was of a bona fide character, on the basis of 16 for fair ordicharacter, on the basis of 16 for fair ordi-nary coke plates delivered at Liverpool; 17/ @ 17/6 for best cokes, and 16/6 for medium charcoal ternes, at Liverpool. For charcoal tins there is at present but little demand, prices being irregular at 18. @ 21/, accord-ing to brand. The number of mills now idle so large that the effect of their stoppage is likely to be felt in the ensuing quarter-a fact which rendered the tone of the market firm and horefu, although it was quite free from excitement." Reading between lines, therefore, we may say the market for these articles is steady, but is likely to advance should your fall trade set in earlier or be larger than ordinary. The "recommen-dation" is valueless under such conditions.

SCOTCH PIG IRON

has become dearer. Warrants closed at 50/2 on July 6, when the market closed for the Fair holidays, as against 47/ the same date of 1881. Maker's iron is also generally higher, under the influence of the repeated reports of a scarcity of No. 3 sorts, the speculative rise in warrants, lower outward freights, and purchases on American and Canadian account. There are now 108 fur-Treignts, and purchases on American and Canadian account. There are now 108 fur-naces blowing (including 10 on Hematites), against 115 a year ago. In Connal's stores there are 635,350 tons. a decrease of 367 tons last week, as compared with 570,288 tons a year back, and 627,186 tons on December 24, 1881. Scotch shipments to date this year have increased by 35,391 tons, while importations into Scotland from Middlesboro' have decreased by 45,162 tons. Writing from Glasgow, July 13, James Watson & Co., Glasgow, July 13, James warson to Scotch iron market has been said: "The Scotch iron market has been speculative

We quote:		2	No. 1.	No. 3.
G M. B., at Glas	gow	*****	51 6	50.6
Clyde,	85 4××		53.0	50/6
ohress,	95		63.5	56/
angionn.	**			:61
sar smerrie,	4.0			55/6
ommerice.	53		60/	53/6
Calder				53.6
Carpbros.				51.0
Henrarnock, at			E4 6	51/6
Keliman				50.6
Datin-llington.				51/
snotts, at Leith.				56/
Kin bell, at Bo'ne				503/
				100 CW

are as under, for net cash, less 21/2 % dis-

	1	Foundry	٠.				48/	ĺ	Mottled	42/6
4.0	3	6.5					46/	١	White	42/
6.0	2	5.5					44	•	Refined metal	62/
5.0	3								Kentledge	
4.0	*	Eases		0	0 1	000	43/0	1	McMuleuge	44/

Shipments to the Continent are good and those to Scotland are a little larger. Bolckow's works are kept well engaged, but there is not now the pressure observable a few months ago. New American purchases of

	No. I.	No. 2.	No. 3
Cleator	621	68/	
Lonsdale	58/	57/	56/
Workington	58/	57/	56/
West Cumberland			
Lowther	. 58/	52/	56/
Moss Bay.	2.27	***	
Distington	58/	59/	56/
Harrington	18/	57/	56/
Eolway	58/	57/	56/
Maryport	58/6	57/	56/

Cheatagraph Bolles		:	:	reside fine bottoms for Egypt, &c	Locomotave Plates, "	orumary oneets, other sizes, and Bolts	Dedical Chart (4 X 4).	mount rerry Care.	wantayoo care	Durra Burra Cake	rrod, 90 % : Best Brands, " " "	TOT TICKED Brands, " " "	dood ord. brands,	Ores and RegulusLiverpool or Swannes	Сорряв.
9%4	6%d. @ 6%d.	£72 @ £73	270 @ £73	232	£30.10/	£78	\$77	nominal	£72	£70 @ £71	nominal	267 @ 67.3/	260.13. @ 267	13/6 @ 14/	Prices.
	L	2	0.0	1	3	2	:	2	5	00	2	2	Ton.	Unit.	Per
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FOREIGN.

Montteur des Interets Materieis.

Montteur des Interets Materies.

Paris, July 16 1882 — Metals.—General business a adversely influenced by uncertain pedities and case favorable crop pro peets. Metals are only moderately active. This signify lower, and Lead a little better. We quote: Copper—Chil Bars, 171.5 & 172.5 for price \$\frac{1}{2}\$ to kg.; lights and Slabs, 185.; fiest Selevied, 185., and pure Corocoro Ore. 172.5. Banca and Billion III 182; Strats and Australian. 2.0. and English, 27.50. Lead to \$\frac{1}{2}\$ & 37. and Speller 44.5 & 44.75. From—A rull is noticed lein this city, but this is nothing but a more charactery rest from feverals activity in the building trade. Belgian Iron arrives besides more exponsity and keeps the price of Merchant Ir n at 15.00 \$\frac{1}{2}\$ to 5 at Paris. The Iron indust y in general in France is, lower, most favorably situate; in a great measure owing to the large requirements for public wooks on the part of the Government. With 19 stel Rais alone, will want 20,000 tons steadily for six years to come per annum. The there are the favorable advices from Germany and Beigi in. In the Artennes there is creat and mastor in the rilway material branch and certain hardware, like, for example boils. In the tautement for the legraph wire at a figure 3 france better for the graph wire at a figure 3 france better.

than last year's average price. In the Loire and Rhone district matters have become more quiet. than last year's average price. In the Loire and Rhone district matters have become more quiet, but this is due to the season, works taking stock in July. The Firming Works are executing a steel rail order for the Mokta Algerian Railroad. The Meurthe and Moselle reports great activity in Foundry Fig in response to better advices from neighboring countries. Puddling Fig is inactive there at 7.20 francs. New blast furnaces are being erected. A tolerable amount of work is done at the No th on the basis of 19 @ 10.59 for Merchant I on: hardware is quiet, except bolts, which are in active request. Coal.—The laying in of supplies has commenced; the demand is good at well sustained rate's.

HAMBURG, July 18, 1882.—Iron.—We receive the ensuing report from Dorimund, dated yesterday: "Firmness in our market is making further headway. On the one hand, business receives its impuise from neighboring countries, whence favorable advices continue dropping in, and on the other, there are important adjudications published during the past few weeks to come off locally. Pig Iron is in such brisk request that an effort is making to blow in more blast furnaces. Luxembourg puddle Pig has been raised from 56 to 57 francs, after having been reduced a short in meaning the past few weeks to come off the meaning of the prices has occurred in his ling-mill products; there is great animation no locable in this branch. After taking stock, the works are busy now in recovering the time thus lest, orders being of a pressing nature. The Steel works also find orders accumulating fast on their hands, various Rail adjudications for domestic requirements having to be filled, while from abroad also a good many orders claim immediate attention. Railrond cars, car wheels and other rolling stock are wanted at once by the Magdeburg, Bromberg, Cologne and Strasbourg railway companies, so as to secure abundance of occupation in this line. With few exceptions the machine shops, foundries and steam boiler works are heavily engaged, especially for the Coal and Iron mining regions. Even bridge builders get to be busy again, but disappointment has befallen the galvanizing shops, the only ones complaining during this extroordinary revival 1; the Iron brunch. Coal mines are doing remarkably well, and at length they begin to realize that the hard times have, from all appearances, vanished for good, and that consumption has worked itself up to the level of the enormous increase of production that has been witnessed for some years past. The Coal movement is favored by plenty of water in the Rhine, so that activity prevails at all Coal yards, and Rhenish ports. "In the Mo-elle and Sarre region great firmness is observable; or pretty much all bran

HOLLAND.

(Koch & Vlierboom.)

(Koch & Viercoom.)

(Koch

AUSTRIA.

(Austrian Trade Journal.)

(Austrian Trade Journal.)

Vienna, July 17, 1882.—Iron.—Nothing of moment has taken place in Austro-Hungarian Iron trude during the week, but gradually the demand for Pig and Finished Iron begins to manifest itself more decidedly. Actual business is, nevertheless, still restricted within narrow limits, while Coal is absolutely lifeless. In Hungary the Czacki, Pahorella, Union, Krompach, Nadrag, Reschitza and Prihrs dej rolling-mill owners have met during the week and raised the price of Sheet Iron half a florm \$\frac{1}{2}\$ too kg. This step will probably be imitated by othee producers in Austro-Hungary. It is to be hoped that Austrian makers may be successful in their tenders for 10 000 Steel Rails and a corresponding amount of Iron Sleepers, Spikes, &c., 10 be adjudicated upon at Rome on the 28th inst. Everything now depends on our cereal crops described as being unusually abundant, while in Western Europe the rains have done a good deal of harm: the prospects are that tolerably good prices will be realized during the campaign now about opening, in which event there will be a large and remunerative sale of agricultural implements, 1001-, hardware and Sheet Iron pretty much all over the country. As, at the same time, the general Iron situation on the Continent seems to be a more promising and sounder one than it has been for many years past, we believe the outlook to be a sale one. Prices of Iron have undergone no change since our last, nor have those of metals. International politics cause no uneasiness in this country: it is not feared that any serious difference will arise between the leading powers. There is, consequently, nothing that we can see to prevent us from having a good fall campaign.

OBITUARY.

ROBERT BRIGGS.

Mr. Robert Briggs, the well-known civil and mechanical engineer, who was for many years connected with some of the leading industries of the country, died a few days since, at his mother's residence in Dedham, Mass., after a lingering and painful illness Mr. Briggs was born in Boston in May, 1822. After taking the course in the Boston schools he completed his education and pursued his professional studies under Capt. Alexander Paris, who was both an architect other unpublished material concerning his profession. Much of this would be available with comparatively little editorial work, and if it could be published would probably be of the highest velue, since no small portion of it was derived from original investi-gation, and prepared with the idea of future publication.

INDUSTRIAL ITEMS.

MAINE.

The Bath Iron Works are very busy on Hyde windlasses.

There are some 10 nail machines in operation in the iron works at Pembroke, turning out large quantities of cut nails and spikes. The balance of the machines-25 in all-are being put in working order, preparatory to doing a large business as soon as plate can be made for them.

MASSACHUSETTS.

At a meeting of persons interested in the Royal Sewing Machine Company, at Attleboro', it was stated that ground had been broken for the foundation of a building, to be 200 feet long by 30 feet wide, and three stories high, a part of which is to be used for the sewing-machine works. for the sewing-machine works.

At Holyoke, the Holyoke Foundry Com-

pany are going to erect a new building, and the Merrick Thread Company are rapidly

equipping their mill.

The Howard Needle Company, of Brockton, have manufactured nearly 5,000,000 needles since the 1st of January. New Machinery is being put in.

The wire mills at Palmer are nearly com-

pleted, and the machinery and stock are on the ground. The furnace at Mount Washington Glass

Works, New Bedford, is to be rebuilt, after

a constant use of 8 years.

By the partial burning of the Wareham,
Nail Company's works, at South Wareham,
100 men are thrown out of employment. The nail factory was saved. The works will be rebuilt at once The B. B. Hill Manufacturing Company

has been formed at Springfield, with \$15,000 capital, for the manufacture of seal and copying presses, dating and other stamps, and light machinery.

Mr. Birkenhead, of the Mansfield Spindle

Works, Mansfield, has added to his business of spindle making the building of an improved lathe intended to meet the wants of mill owners and machinists. It is not encumbered with pack gears or screw cutting, and is extremely handy for boring and turn-This tool will be of service places where the lathes are unusually too large and heavy for any of the work. This lathe with countershaft weighs, with a 4-foot bead, 625 pounds. They are made with 4, 5, 6 or 8-foot bead. It swings fifteen inches 6 or 8-foot bead. It swings liften inches over bead and 7½ inches over carriage; four speeds 1½ inches belt, or three speeds with 2¼ inches belt, as may be ordered. The cones are turned inside, hence they are balanced; large hollow spindles with taper bearings. The feed cones can be adjusted to bearings. The fee suit length of belt. It has a self-acting stop motion invented by Mr. Birkenhead, so that a boy can run several lathes on special work.

—Boston Commercial Bulletin.

The Wilder Screw and Sewing Machine Co, to be started at Uxbridge, will manufacture the machines of the inventor, and in order to avoid delay in its organization the company has been formed under the laws of Connecticut. The following board of directors were decided upon to have entire charge of the enterprise: Moses Taft, Arthur of the enterprise: Moses Taft, Arthur Wheelock, Geo. W. Hobbs and Dr. Levi Wilson, of Uxbridge, and Mr. F. Wilder, of Boston. The offer of Mr. Zadok A. Taft to give all the necessary land near the station give all the necessary land near the station and a steadily increasing output is being wooden bulkness are not what the mode of the Providence and Worcester and a steadily increasing output is being labe and responsible parties who can build not be the model of the Providence and Worcester and a steadily increasing output is being labe and responsible parties who can build not be the model of the Moses Taft, Arthur WEST VIRGINIA.

At the mill of the Kloman Steel & Iron Co. at Moundsville, recently leased by Mr. Carruthers, about 50 men are employed. The second spike machine is now in operation, and a steadily increasing output is being labe and responsible parties who can build road was accepted, and thus a central loca-tion is assured.

tain, are building a new malleable iron foundry, 130 x 90, 20 feet walls, roof 20 feet rise, and a main building 185 x 40, 20 burgh, Pa., have decided to locate their new feet walls, roof 20 feet rise; also, an assort-works at Aurora. The merchants and business excellent.

Charge.

Charge.

Charge.

Charge.

Of the projected 4527 miles of railroads, 560 have been completed.

and a general outfit of machinery through their works.

The Norwalk Board of Trade is making an effort to secure the location in that place of is \$250,000. Of this sum \$100,000 would be expended for land and buildings, leaving a working capital of \$150,000. The people of Norwalk are asked to subscribe \$50,000. A committee has gone to visit the works at Chicago and see that everything is as represented.

PENNSYLVANIA.

The 20-inch mill and the old plow shop of the Gautier steel department of the Cambria Iron Works, Johnstown, have resumed opera-tions after a week of enforced idleness. The Gautier rod mill is likely to start up next month.

The Monastery Coke Works, at Latrobe have started up again in full. They are employing 50 more miners and 30 drainers.

The Phenix Iron Works, at Phenixville, works at South Chicago, x

is running full, double turn, with the exception of the puddling department. The product of this department is not needed, as the company receive all the muck bar they want from their Safe Harbor works. They will soon have their mechanical puddle in opera-They will

The Spring City Iron Foundry Company have purchased the real estate and building of the estate of Shantz & Keeley, for

new Plymouth Rolling Mill, at Conshohocken, has gone into operation to manufacture muck bars, sheet, bar and merchant

The work of repairing Colebrook Furnace the work of repairing coleroos Furnace is going ahead rapidly, and with the aid of the electric light, with which the furnace is supplied, can be continued at night. The large salamander was removed from the stack by the drawing power of a locomotive, perhaps the first case of the kind on record. Mr. Coleman, while necessary repairs are being made, contemplates building the stack 25 feet higher, which will greatly increase the capacity of the furnace.

It is reported in a well authenticated man-

ner that Hon. J. D. Cameron, Colonel James Young, Colonel Henry McCormick and Charles L. Bailey have purchased the Lochiel Iron Works, and will at once overhaul its machinery and start the vast works under

the new auspices.

The West Hamburg Iron Works will resume operations, double turn, some time this week. Luken's Rolling Mill, at Conshehocken, is

rapidly nearing completion. The large worsted mills are nearly done. Partnership difficulties in the firm of Kimberly, Carnes & Co. have culminated in a suit in the Common Pleas Court of Mercer County, brought by James Carnes against his partner, P. L. Kimberly. Mr. Carnes al-leges mismanagement and improper use of the firm's money by Kimberly, and asks for the appointment of a receiver. Mr. Kimberly has always been regarded as the monied man and the leading spirit of the firm. It is stated that some time ago he found it impos-sible to continue in business with Mr. Carnes and made him an offer to sell or buy on certain terms. Carnes did not see fit to take either horn of such a ditemma, and the troubles followed which have culminated in

the suit above mentioned. PITTSBURGH AND VICINITY.

At the Superior Mill of A. Kloman, the 16-inch bar mill has been started up non-union, and is running on iron for the Monigahela Bridge. Last week the sheriff sold all the loose ma

terial owned by the U.S. Iron and Tin Plate Co. at Demmler Station. The mill property will not be sold until September.

The Phoenix Glass Melting Pot Works are laily in receipt of an increasing number of inquiries with regard to their pots, and have now several large orders on hand. They make some heavy consignments East about

the 1st of August.
Oliver Bros. have completed the repairs on their mill.

The two billet mills and guide mill of Dilworth, Porter & Co.'s Iron Works, South Side, which have been idle for three weeks on account of the putting in of a new engine

and boilers, will resume operations to-day.
The new continuous train of rolls recently completed will be also put in operation.
George G. McMurtry put his new nut and bolt works in operation last week. Mr. McMurtry was of the late firm of Charles & McMurtry.

the starting up of the pumps of some of the rolling mills, a number of which are now pumping water into the street mains. OHIO.

upper furnace at Steubenville has been shut down and banked for an indefinite

Dispatches state that a site has just been purchased in Youngstown for a new Siemens' patent steel plant, and ground will be broken for the buildings within the next few days. The new works is to be operated by a company in which Wm. Tod & Co., John Stambough, Joseph H. Brown, Robt. Mc-Curdy and C. D. Arms are large stockhold-A large Siemens' regenerative furnace will be built, and the machinery will include

ILLINOIS.

At a meeting of the stockholders of the Ill-The Frary Cutlery Co., Bridgeport, state inois Iron and Bolt Co., held on the 11th ulthat they produce of knives and forks about time, it was voted to increase the capital They stock from \$110,000 to \$276,000 The North & Judd Mfg. Co., of New Bri- added \$15,000 worth of new machinery, and

ing room, 190 x 40, two stories. They have ness men of the latter city have generously company state that they will have to expend \$200,000 before being ready to commence business. Some idea of the magnitude of the Wilson Sewing Machine Company, of the business. Some idea of the magnitude of the Wilson Sewing Machine Company, of the business of this concern may be formed when it is known that they paid last year to one railroad over \$500,000 for freight. These works will be a great acquisition to the man ufacture about 95,000 machines a year. The total amount of cash capital required is \$250,000. Of this sum \$100,000 would one railroad over \$500,000 for freight. These works will be a great acquisition to the manufacturing industries of this city.—Chicago Industrial World.

g Industrial World.

The new furnaces lately placed in the Aurora Malleable Iron Works are doing finely, and the foundry is pushed to its fulls est capacity. A further extension of the works will be made next season.

The output of the North Chicago Rolling Mills for the year ending July 1, 1882, is as

follows, in gross tons:	,
Manufactured steel ingots Manufactured rails. Manufactured pig iron. Manufactured merchant bar and splices Manufactured muck bur	132,800 111,47 179,23 43,28 82,05
Total	w.0 0

The above does not cover the product of the works at South Chicago, with the exception of 100,000 tons of pig iron included in the above statement. Their entire works at South Chicago are now running, and when working to their full capacity will give them an additional output of 175,000 tons of steel ingots and 150,000 tons of steel rails per annum. The South Chicago furnaces if running to their full capacity could produce 200,000 tons of pig iron annually.—Chicago Industrial World.

Benjamin, Fischer & Mallery are adding to their works additional tools, are operating works night and day and employing 60 men. This firm are building four large resawing machines and one dimension dressing machine, for firms in Michigan and Wis

The Hercules Iron Works are building a 9 x 16 reversing engine for the North Chi-cago Rolling Mill Co.'s rail mill at South Chicago,

INDIANA.

The Atlas Engine Works, of Indianapolis, The Atlas Engine Works, of Indianapolis, are now building an 18" x 24" engine with three 54" x 16" tubular boilers, and all necessaries for the new shop of the Johnson Malleable Iron Company of that city; also a Maleable Iron Company of that city; also a 14" x 20" engine with boilers and complete outfit for the Ashland Manufacturing Co., of Ashland, Wis.; a tubular steel boiler 52" x 16, with mud drum, fre fro it and complete outfit for the new shops connected with the Rose Polytechnic Institute, at Terro Haute; and a 75 H. P. locomotive boiler for the Cincinnati Gas Light and Coke Company The works will also furnish the steam-power for running the machinery at the Lo Industrial Exposition, and at the Michigan State Fair. For the Louisville Exposition. they will furnish one of their 60 H. P. Atlas-Corliss engines, and for the Michigan Fair one of their new semi-fixed engines and boilers complete.

MISSOURI.

The St. Louis Spring Company, manufac-turers of carriage and wagon springs, now employ 25 hands, and report a thriving busi-ness, being behind on orders at present, but

they will soon increase their force in order to meet the demand for their goods.

The Buck Stone Co., of St. Louis, are again in operation, after an idleness of over

two weeks The Standard Stamping Company started up their entire works Monday, 17th ult., and are now running them full handed.

The St. Louis Iron Fence Works report business good, but not so good as during last March and April.

Pittsburgh's Water Supply.

At a recent meeting of the Produce and Grain Exchange, together with a large num-ber of the general public of Pittsburgh, the following resolutions concerning the water supply of the city were adopted:

Whereas, Ten years of time and \$6,000,000 have been expended to provide a water supply for this city; and,
Whereas, All this time and all this mon

Whereas, All this time and all this money has been expended so wisely, discreetly, ably and judiciously, that to-day the city is at the mercy of the flames, and water is retailing at five cents per bucket; and,

Whereas, The monumental stupidity of those in charge of our city's water works and its belongings has made Pittsburgh a laughing stock in the eyes of the country, has exhausted her people's patience and imperiled her taxpayers' property; therefore, be it

IcMurtry.

The break-down at the water-works which re have to report this time, is so extensive merchants assembled, keenly alive to the great dangers of the hour, are desirous of pla ourselves on record as emphatically protes against a continuance of the disgraceful and inexcusable blundering of the Water Committee, the Mechanical Engineer and others chargeable with the city's alleged water supply.

Resolved, That we as an organization take

this means to express our determination to take such action as shall lead to the betterment of the present dangerous state of affairs in this city, and shall tend to arouse those in authority in the water works management to a sense of their shortcomings.

Resolved, That we believe that anything

TO

EXT

212.

that can be done with the present pumping engines at Negley's Run is at best only makeshift, and that should we obtain supply of water from these, that it would be but for a short time; that patchwork and wooden bulkheads are not what we should

such engines under proper bonds, and guar-antee to give us an ample, complete and relable supply of good water, always giving preference to our own manufacturers.

Resolved, Further, that in our opinion the

work should be in charge of some other Me-chanical Engineer than the one now in

Of the projected 4527 miles of Mexican

IF DEALERS WILL LOOK INTO THIS MATTER OF

ACK SCREW



They will find that ours are much better made than any others in market. And furthermore, that by weight they are the cheapest. The same is true of our Bench Vises. We could cut down the weight one-quarter and it would hard he retired but in using the y be noticed, but in using the Jacks under great strain some backs under great stands some body might get hurt. It is better for all concerned to make reliable goods, and sell them at a price based on qual-ity, so that when they are put on the market they will stay. We guarantee the quality of all our goods, so that dealers

They will find that ours are

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MILLERS FALLS COMPANY

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CHAMPLA

Forged Horse Nails. MANUFACTURED BY THE

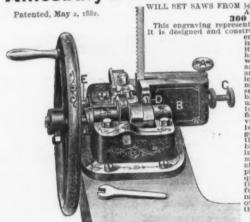
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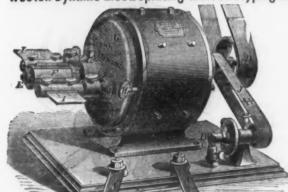
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WILL SET SAWS FROM M INCH TO 2 INCHES WIDE ACCURATELY
AT THE RATE OF
200 Teeth per Minute.
This engraving represents our new Band Saw Setting Machine.
It is designed and constructed upon entirely new principles, and
embodies all the good features of hand-work
in combination with the speed and regular-

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Are used by all leading stove
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chasers.

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We call attention to infringements of the Weston Machine in which Automatic Switches are used to prevent change of current. The Weston Co. are current, by crant or purchase hines will certainly lead to reat loss to parties purchasing rusing them.

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CHARLES H. HOWELL & CO.,

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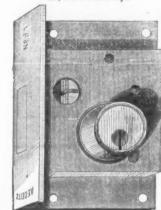
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Counter, Portable, Dormant, Stock and Hay, and R. R. Track

SCALES.

Call Special Attention to their

SUSPENSION HAY & R R. TRACK SCALES. Also, Warehouse Trucks and Letter Presses,

PRINCIPAL WAREHOUSES,

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SIMMONS HARDWARE CO. St. Louis. PRIZE MEDALLISTS:

Exhibitions of 1862, 1865, 1867, 1872, 1873, and only award and medal for Noiseless Steel Shutters at Philadelphia, 1876; Paris, 1878, and Melbourne,

CLARK, BUNNETT & CO. LIMITED,

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Original Inventors and Sole Patentees of Noiseless Self-Coiling Revolving

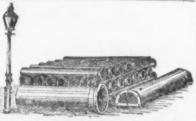
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WHITMAN AGRICULTURAL CO.

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Genuine and Mechanics

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Screw Wrenches

L. COES & CO.,

Worcester, Mass. ESTABLISHED IN 1839.



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Sole Agents. THE 1882 PENNSYLVANIA LAWN MOWER

Outstrips All Competitors. Premiums Taken Over All Other Mowers.



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ROLLING WOOD SHUTTERS, Best 10-Inch Forward Cut Lawn Mower in the Market, named "Quaker City."

For descriptive catalogue and prices write to

OYD, SUPPLEE & WALTON, Philadelphia,

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ELECTRIC LAMPS.

PLATES FOR BATTERIES

We make a superior carbon for electric lamps; straight, burning with a clear white light, and of the greatest possible durability.

Send for samples and price list.

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PHILADELPHIA SCREW CO., Limited. Twelfth and Buttonwood Streets, PHILADELPHIA.

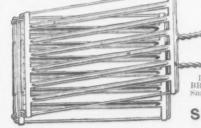


IRON & BRASS WOOD SCREWS.

Quality, finish and tests as to strength guaranteed equal to any in the market. With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for



discounts. A full line in stock.



STANDARD MFG. CO.,

Tin Plates and Brands.

The London Ironmonger says: question of private and other brands of tin plates is again being discussed in our pages, plates is again being discussed in our pages, just as the same subject is undergoing similar investigation on the other side of the Atlantic. In neither country is the issue satisfactory—so far as it has been developed—and in neither are consumers content to rest satisfied with the existing state of affairs. The two cases are almost on all-fours, with The two cases are almost on all-fours, with the exception that we have all the makers here, and can reach them rather more promptly and directly than our American friends are able to do. In both countries there is a deep discontent on the subject of quality as represented by brands, coupled with which is a strong disposition to throw all the blame upon the shoulders of the deal-ers or merchants. One of our recent correcall the plame upon the shoulders of the dear-ers or merchants. One of our recent corres-pondents leveled serious allegations against those merchants who indulge in what he terms the 'vicious' practice of using pri-vate brands, while our other correspondent, 'Tinplate,' defended the practice, and pro-fessed his intention to continue its use. Both writers, no doubt, have a certain amount of argument in favor of their respective views From the makers' standpoint there is doubt From the makers' standpoint there is doubtless a vast amount of mischief done by private brands—indeed, it is altogether surprising that the manufacturers should ever
have permitted their business to be virtually
controlled by other persons. At the same
time it must be remembered that a similar
usage obtains in several other industries.
Many of our leading cutlery, edge-tool, brassfounding, lock, &c., houses sell goods bearing their marks which are not of their own
make. In most cases, however, the tradeing their marks which are not of their own make. In most cases, however, the trademark or nama is supposed to guarantee the quality of the goods, and the vender, whether the actual maker or not, is the person upon whom the retailer and consumer rely. In the tinplate trade, on the other hand, the consumer or retailer knows nothing of the real producer. To him, as the trade is now conducted, the brand represents everything. He is supposed to know what brand suits him, and he buys that class of plates in the belief that he is getting goods equal to his former experience, or the general reputation of such brand. Provided the plates answer the purposes for which they are needed, the transaction ends satisfactorily, and there is former experience, or the general reputation of such brand. Provided the plates answer the purposes for which they are needed, the transaction ends satisfactorily, and there is no room for complaint. As a matter of strict fact, however, widely different results very frequently come about. It is found, in practice, that the same brand does not invariably cover the same kind of plates, and especially so, it is urged, where the goods are purchased from merchants. Makers, however, are not by any means exempt from similar variations—indeed, we heard of an instance last week in which a certain brand of plates, made by one of the oldest and best firms, had twice recently been found inferior in quality, and utterly unsuitable for a class of wares for which it had been used for years. This, of course, may be deemed accidental, yet it is a fact to be borne in mind when considering this particular difficulty. That makers have a more direct and positive interest in maintaining the reputation of their brands is not to be denied, and they would exercise even greater care in that respect were the system of direct dealing more generally observed. Merchants' brands are necessarily more uncertain, seeing that they are often made for nobody in particular in the first place, are largely produced by needy makers, and are not infrequently the outcome of negotiations in which price is the sole consideration. The same brand does not in reality cover the same class of plates; hence the constant complaint that a brand which answers well one week will not severe for the same goods another week. It may be, of course, that merchants themselves are also deceived, in which case the system stands further condemned. In any case, it research that the purpose, and the fire when there is no available to the the commissioners. Her builders were Wood & Dialogue, of Camden, N. 2.

She has a powerful marine condensing entire aloes were fund can keep up with the fastest tugs in the harbor. During the seven years that she harbor. During the seven years for the same goods another week. It may be, of course, that merchants themselves are also deceived, in which case the system able aid from the Fire Department, civilians tands further condemned. In any case, it seems to us that consumers have the remedy entirely in their own hands. Instead of relying simply upon brands, let them buy with a distinct statement of the uses to which the plates are to be put. They ought then to obtain exactly what they require whether they buy from makers or merchants, and may insist upon having just what they need. The system of brands what they need. The system of brands would thus be superseded to a great extent, and the present anomalous condition of affairs thoroughly swept away. If consumers would do this, and makers at the same time fairs thoroughly swept away. If consumers would do this, and makers at the same time endeavor to form closer relations with ac-tual users, we should soon cease to hear

The Spanish Trade Mark Treaty .of the Spanish trade-mark treaty, says that lyn, the fire boat Havemeyer did party in case of infringement to recover damages. No exclusive right of use of trade-mark, however, can exist beyond the

complaints as to private or any other brands.

vestigation have hitherto been employed only in laboratories and upon a limited number of samples. The above mentioned gentleman has employed Mohr's processes for the investigation of chlorides, which is not only exact, but can be employed upon shipboard under all circumstances. It requires neither accurate weighings nor numerous precautions.

The meant is marked at which a change about so belos of shavings caucht fire at a contract of the fire boat dud good service. On the 18th ult. samples. The above mentioned gentleman has employed Mohr's processes for the investigation of chlorides, which is not only exact, but can be employed upon shipboard under all circumstances. It requires neither accurate weighings nor numerous precautions. The moment is marked at which a change of tint is made by the addition of bichromate 15" and 45" north latitude.

The River Fire Service.

For a city having such an extensive water front as New York, with piers containing warehouses in which much valuable freight stantly stored, and with steamboats and craft of various kinds likely to suffer in case fire breaks out on the river front, a river fire service is a necessity. One of the daily papers recently contained an account of how our river fronts are protected by the fire de-partment. The story is quite interesting, and we reproduce it in full in this connection. Whenever there is an alarm of fire along the river fronts of the city, the signal is transmitted to the fire boat William F. Havemeyer, which is stationed at the bulkhead on the south side of pier I. North River, with steam always in the boilers. Instantly the lines are cast off and the tug puffs away to the point of danger. When tied to the bulkhead the fire boat has precisely the same communications with the fire signals of the city as are seen in any of the fire engine houses, a small cable that can be readily jointed or disjointed with the land wires connecting with the gongs and alarms on board. There is telephonic connection with all the engine-houses and with headquarters.

The fire boat was built in 1875, by order of Fire Commissioners Cornelius Van Cott, Joseph L. Perley, and Roswell D. Hatch. She was named after Mayor Havemeyer, who appointed the Commissioners. Her builders

The fire boat can answer an alarm as high as Twelfth street in 12 minutes. She is expected to answer calls within the city limits in both rivers, and has often proved of service in saving the property of our neighbors. Union had been previously. They will be known as District Assembly No. 9. The district was established in 1877, and its territor in the Havemeyer sugar houses in Brooklyn, the fire boat Havemeyer did good service. of the Spanish trade-mark treaty, says that it was drawn after the usual form in the book of trade-mark treaties, all of which follow one pattern, reciting that whereas the President and the King of Spain desire to secure guarantees of property in trademarks, the Secretary of State and the Spanish Minister Plenipotentiary on one side and the Spanish Foreign Secretary on the other side have agreed to certain articles—one forbidding reproduction of the trademarks of citizens of one country by citizens of the other, and authorizing the injured party in case of infringement to recover damages. No exclusive right of use of trade-mark, however, can exist beyond the damages. No exclusive right of use of trade-mark, however, can exist beyond the time fixed by law in the country in which it is used. Article 2 provides that a resident of one country desiring to use his trademark in both countries must file duplicate copies of those marks at the Patent Office here and the corresponding office in Spain. Article 3 provides that the arrangement shall go into effect 90 days after ratification and continue, even after the expiration of 10 years. Article 4 states that ratification shall occur within 12 months, and closes with the attestations of the Secretary of State and corresponding officer of the other country.

M. Bonquet de la Grye recently made a series of observations relating to the density of sea water and its proportions of salt of the ocean and the current exhould be an intimate relation between the amount of salt of the ocean and the current should be an intimate relation between the amount of salt of the ocean and are current and saved 1300 barrels of the oil. They would have saved more, but a tugboat Capter of the sudd have saved more, but a tugboat Capter of the sudd have saved more, but a tugboat Capter of the sudd have saved more, but a tugboat Capter of the output to the bark to shallow water, where should be an intimate repair of the sudd to the great cotton fire at the foot of Bank street on Feb. 22 last and kept there are into the country. The pumps were kept going by practice law. It is stated that none of the numerous coal strakes of late years have rentirely. When a fire needs to be drenched out by the week, that is a great saving of the output here of the other country. The objection of the surface of shallow pater is that it damages goods more than the clean Croton water. When the fire boat gets into shallow water when the fire boat gets into shallow water when the fire boat gets into shallow water the pumps are liable to draw up mud. To obtain the provided with output the provided with the provided with the provided with the provided with the provided wit the bay, having on board 2700 barrels of kerosene oil, the fire boat went to her assistance and saved 1300 barrels of the oil. They

about 50 bales of shavings caught fire at Pier 32, and would have played sad havoc of tint is made by the addition of bichromate of potassium, and a simple reading upon a graduated tube or counting the drops of the experimental liquid, is sufficient to give with great accuracy the weight of the chloride which is contained in a given quantity of the water. By means of this process M. Bonquet de la Grye has constructed a chart of the relative levels of the Atlantic Ocean between the relative levels of the Atlantic Ocean betwe the hre-boat crew have done good service in saving the lives of seven persons, who have either fallen or been thrown into the river at the Battery. Among those saved by Captain Farrell, Firemen Moclair, Hamilton, Stokes, Lynch and others were an unfortunate German named Hefferman, who had \$2000 in his pocket, and a wretched woman who had been thrown off the dock by some who had been thrown off the dock by some of the roughs of the First Ward. The Captain also saved an unfortunate pup found struggling in the bay, and the dog has become a pet with the men, who have named her Nellie. She pays her board by keeping off the tramps, who are always ready to slip on board and steal whatever they can lay hands on. The Fire Commissioners long ago. on board and steal whatever they can lay hands on. The Fire Commissioners long ago concluded that a fire boat on each river front is a necessity. The Havemeyer has saved almost the worth of her weight in gold, and the danger of leaving the river front exposed while she is undergoing needed repairs has long been felt. A new fire boat has been ordered, and is now under contract at Wilmington, Del. She will be more effective than the Havemeyer.

LABOR AND WAGES.

It is reported that the National Tube

It is reported that the National Tube Works Rolling Mill, at McKeesport, Pa., will start non-union. One of the Pittsburgh papers having stated that Mr. Flagler had said he would run the mill "black sheep," the following card has been issued:

To the Editors of the Dispatch.—We notice in your issue of this morning that you report our General Manager, J. H. Flagler, as having stated that he considered it entirely feasible to run our rolling mill as a "black sheep" mill. We beg to state that our General Manager never made use of that language, and, moreover, we consider the term guage, and, moreover, we consider the term "black sheep" as an insult to every honest man who prefers work and the support of his family to enforced idleness. Further-more, it has never been the intention of the company to employ anybody, either in the rolling mill or in any department of their rolling mill or in any department of their works, to whom that term would be applicable; on the contrary, we have always paid, and propose to pay in the future, the highest wages paid in any rolling mill in this district, or at least the ruling wages paid by all the mills, and under those circumstances and in consideration of that fact, nobody has been as yet nor will be employed by the company to whom the term we have above referred to will be in any way applicable. Will you kindly state this in the next edition of your paper, and relieve from the minds of everybody, who saw the previous article, the imbody, who saw the previous article, the impression which may prevail with some, that this term was ever used by us or by any officer of the company who has any authority to speak for them.

Yours respectfully, NATIONAL TUBE WORKS CO. McKeesport, July 27.

The National Lodge of the Amalgamate sociation met in Chicago on Tuesday. Association met in Chicago on Tuesday.

The window glass workers of America held their National Convention at Kauffield's Hall, Pittsburgh, beginning Tuesday morning, July 11th, and closing Saturday, 14th, at noon. There was a representative from every factory in North America, and aside from the routine business, consisting of amending of old and enactment of new laws for the government of the organization it.

The Miners' Association of Western Pennmediately before and after the 3-cent strike of 1879 the organization grew very rapidly, but the interest flagged, and a little over a year ago but few assemblies held their char-ters. Since then the number in good standters. Since then the number in good standing has been increased to 32, with a membership of 3000. The work of organization is being pushed forward, and it is claimed that before fall the number of members will be increased to 10,000. When all the miners of the district have been eurolled, an enthusiastic member states that it is intended to send organizary out to Ohio and that after to send organizers out to Ohio, and that after that time there would be no strikes, as if all were Knights of Labor they could limit the

NO PRIVATE BRANDS IMPORTED.

We have in stock the following well-known standard makers' Brands of Charcoal

ROOFING PLATES,

PRIME AND WASTERS.

M. F. PONTYMISTER REDIPPED. MELYN. TALBOT. PONTYMISTER. P. T. L. ABERCARNE. BAGLAN.

WORCESTER. ALYN. CAMARET. DEAN. S. T. P. ABERTILLERY. ARDA. O. F. P. P.

ALSO,

ROOFING. COKE

For Sale at Lowest Market Figures.

MERCHANT

PHILADELPHIA.

July 15th, 1882.



With the front plate removed, showing the rotating air tubes, through which four different currents of air may be passed, thereby making any sized fire, from two to eighteen inches in diameter. It actually SAVES ONE HALF of the coal, makes an inches heat just where 'tis needed, and burns NO coal unnecessarily; always gives a center blast, and cleans all the dirt from the fire; supplies hot water. We also furnish a Tuyere on same principle without water attachment. All goods guaranteed to please or no sale. Catalogue sent free. Special inducements to the trade. Address

A. W. MORGAN & CO., 52 VANCE BLOCK, INDIANAPOLIS, IND.

INDIANAPOLIS. July 11, 1881.

MESSIS. A. W. MORGAN & Co.

Gentlemen: I have tested your Variable
Blast Tuyere Iron, and pronounce it a perfect
success. It does all you claim for it. Makes
a large or small fire at will; gives a center
blast; saves time, labor and coal, and it heats
much more rapidly.

AUGUST ALTON. AUGUST ALTON

Nirvana, Mich., Oct. 10, 1881.

A. W. Morgan & Co.

Dear Sirs: I have tested your Variable
Blast Tuyere Iron perfectly. I can take a
larger heat with less coal and labor than any
other iron I ever saw. It is second to none.
I have welded a four-inch bar with the smallest blast for a test.

Yours truly, DANIEL MERV.

LEXINGTON, MICH., Oct. 16, 1881.

A. W. MORGAN & Co.
We are well pleased with our Tuyere Iron.
It gives the best satisfaction, and is a great
saving in coal. W. J. BAKER & CO.

MESSRS. A. W. MORGAN & Co.

Dear Sirs: We take great pleasure in recommending your Tuyere. We believe it the very best made. Yours.

INDIANAPOLIS MACHINE & BOLT W'KS.



OUT! JUST Anchor Lock Faucet.
PENFIELD BLOCK CO., Lockport, N.Y. Patent Applied For.

HENRY B. NEWHALL, NEW YORK AGENT.

S. H. & E. Y. MOORE, 163 & 165 Lake Street, CHICAGO AGENTS.

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The Great Railroad Paint. CHARLES E. McBRIDE, Eastern Agent, 197 Pearl Street, New York.

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DE-OXYDIZED BRONZE.

PATENTED.

Is composed of LAKE COPPER and best ASIATIC TIN in any proportion required, so as to be either as ductile as copper, as tough as iron, or as hard as steel, according to the proportion of Copper and Tin used.

The process of making the alloy is what constitutes its superiority over any other known alloy of Copper

and Tin or any other Bronze composition.

The castings made from this metal, owing to its perfect fluidity when melted, possess great density, perfect soundness and homogeneity. Unlike certain bronze and other compositions, it can be handled without the least difficulty by any ordinary founder, as it flows like oil in pouring.

TENSILE STRENGTH OVER 90,000 POUNDS TO THE SQUARE INCH.

We claim for it

- 1. UNEQUALED ENDURANCE.
- 2. SUPERIOR ANTI-FRICTION QUALITIES to any other known Bronze or Brass.

3. CREAT MALLEABILITY AND TENACITY.

- 4. SUSCEPTIBILITY of the HICHEST FINISH on account of its homogeneity and smoothness of surface.
- 5. JOURNAL BEARINGS made of D. O. B. require ONE-FOURTH less LUBRICATING MATERIAL than any other metal yet known.
- 6. It is superior to all other bronze for the following purposes:

1. Engine, Car, and Machinery Journals.

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- 3. Car Trimmings, Harness and Coach Furniture, House Hardware, Steam Fittings. &c.

4. Wire Sheets, Rods and Tubes.

5. Bells, Gongs, Ordinance, Boilers, Fire Boxes.

6. Tuyeres (For this Purpose it has no equal).

7. ART METAL WORK it finishes as handsome as Cold.

8. CHIMES AND PEALS OF BELLS.

We are making a specialty of Chimes and Peals of Bells from 2000 pounds the Peal up to 25,000 pounds Chime of 9 Bells, or any greater weight or number of Bells. We also furnish small and large Bells singly of all descriptions. Send for Circular.

Henry Disston & Sons, Saw, Tool, Steel and File Works, Front and Laurel Streets,

Philadelphia Smelting Company: PHILADELPHIA, October 4, 1879. GENTLEMEN: After a treal of eighteen months of your "DE-OXYDIZED BRONZE" as Journal Boxes in our Rolling Mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used. Very truly,

HENRY DISSTON & SONS.

Office of Eagle Iron Works, 1162 North Third Street,

PHILADBLPHIA, August 29, 1879. Philadelphia Smelting Company:

GENTLEMEN: In reply to yours of the 28th inst., we beg to say that we have been using your "DE-OXYDIZED BRONZE" for over a year, and have found it better than any composition boxes we have used; and as long as you continue to make it the same quality, we shall use no other metal in our Engine Boxes. We therefore take pleasure in recommending it to Engine Builders in general.

Yours very truly, J. HALL DOW, President.

Cowles Hardware Co., Manufacturers of Solid Bronze Butts and Blanks, Unionville, Conn., say—
"We use only 'DE-OXYDIZED BRONZE,' which is superior to any other metal known for our purposes, as it is of unequaled endurance in resisting friction and susceptible of the highest finish."

We can also refer to many large concerns, in addition to above, who are using it in preference to any other.

Office of Union Brass Manufacturing Company, CHICAGO, Dec. 23, 1880.

Philadelphia Smelting Company, Limited, Twelfth and Noble Streets, Philadelphia, Pa.: Dear Sins: In reply to your inquiry of yesterday as to our opinion of "De-Oxydized Bronze" for Railway Coach Trimmings, I beg to submit that we have used it up to present writing for the trimming of something over 100 coaches. One marked peculiarity of this metal, when highly finished, is non-liability to abrasion, and its non-affinity with the gases of the atmosphere, which in embossed work is a great desideratum. To those willing to pay more in the first cost, we would confidently recommend "De-Oxydized Bronze" Trimmings as cheaper in the end.

Yours very truly,

J. HALL DOW, President.

We can also refer to many large concerns, in addition to above, who are using it in preference to any other.

DE-OXYDIZED COPPER.

We are making "PURE" Sheet Copper and WIRE. Its tensile strength is double that of ordinary Copper Sheet and Wire, and it is perfect in its texture.

GENUINE BABBITT.

Our Genuine Babbitt is superior to all other makes in the market in every particular. We guarantee it to be perfect in its Anti-friction qualities in machinery AT A SPEED OF 10,000 PER MINUTE, or at 1000 TONS PRESSURE for 10 YEARS. We append below testimonials from A1 houses justifying us in the above claims.

years on our wood revolutions per minute, and a speed of oso revolutions per minute, and ways with entire satisfaction.

G. W. INGALLS & CO.

NEWARE, N. J., Dec. 19, 1881.

Gents.—We have received word from our bon forging machine. The Babbitt Metal Bearings in main shaft are sinches diameter by 1 inches ong each, and in the Caps and Crank Bearing is 14 inches. The machine strikes 18,000 blows at 14 inches. The machine strikes 18,000 blows alaily making wrenches. It has run steadily for 2

Woncester, Mass., April 21, 1881.
We have used your "Genuine Babbitt" about 4 tears on our wood-cutting machinery bearings, run t a speed of 5800 revolutions per minute, and alroys with entire satisfaction.

G. W. INGALIS & CO.

Newark, N. J., Dec. 19, 1881.

Gents.—We have received word from our Genuine Babbitt Metal Bear
Newark, N. J., Dec. 19, 1881.

Gents.—We have received word from our machine. The Babbitt Metal Bear-

The "Genuine Babbitt" we have bought from The "Genuine Babbitt." we have bought from you gives perfect satisfaction in our Stone Breakis green. We have it working in bearings 12 in. long and to into Bars. as usual. We think the continuance of the constant effort made by other parties of the constant effort made by other parties divert our patronage, is a sufficient recommendation. The shaft makes from soo to 250 turns per minute. I think this is a very severe test, yet they have been running for more than one year.

Bend us 1000 pounds "Genuine Babbitt," divided into Bars. as usual. We think the continuance of the constant effort made by other parties divert our patronage, is a sufficient recommendation of your goods. We speed some journals as high as 6000. Yours truly,

WITHERBY, RUGG & RICHARDSON

From J. L. Marsden, Supt., all From Witherby, Rugo & Richardson, Madelinery, Ansonia, Cong., Aug. 17, 1880.

From Witherby, Rugo & Richardson, Madelinery, Worcester, Mass., Nov. 20, 1880.

Bend us 1000 pounds "Genuine Babbitt," divided

From this it will be seen that it can have no superior, or even equal, as an Anti-Friction Metal in anything manufactured. We make besides all grades of Anti-Friction Metals.

Letter A, Guaranteed at a speed of 2000.

Letter D, Used for Shafting.

Letter B, Guaranteed at a speed of 1000. Letter E, Used for Ag'l Implements, &c.

Letter C. Guaranteed at a speed of 800. Letter A L, For slow speed.

All our Metals are made from best Lake Copper, Asiatic Tin, Cookson's Antimony and best Refined Lead, and in all cases run free at melting heat, without drossing, and without any necessity for heating the journals into which they are poured.

MACHINISTS' NAME PLATES, MANUFACTURERS' AND

Patterns from \$3 upwards, according to Size and Style. Sketches furnished for approval before making Patterns. We have a specialty in this line and produce a handsomer plate, at less money, than can be obtained elsewhere.

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STREETS, PHILADELPHIA, PA.

METALLURGICAL NOTES.

ROASTING ORES IN MEXICO.

The operation of roasting silver ores in Mexico previous to their being smelted, is described as follows in our contemporary Iron: In some places the ores are roasted in heaps, this being done by surrounding the mineral, broken into large lumps, with a layer of charcoal retained in its place by an open wall of rough stone built in a circular form. The openings in this wall admit the open wall or rough stone built in a circular form. The openings in this wall admit the passage of the necessary amount of air, and the operation is completed in the course of 24 hours, with an expenditure of charcoal amounting to one-half the weight of the ores operated upon. At other places the ores are roasted in circular kilns 4 feet 6 inches in diameter and about the same hight. These are formed of a lot om wall of adobe or sundried bricks, and are without a roof, the walls being so constructed that the area of the openings is nearly equal to that of the brickwork between them. Each kiln is charged with about 2000 pounds of roughly broken ore mixed with one-half its weight of dried wood. The operation requires about a week for its completion, and can naturally be employed only during the dry season.

THE PRODUCTION OF LEAD IN 1881. The following table, showing the production of lead in European countries in the year 1881, has been given by Mr. Landsberg, director of the well-known Stolberg Co:

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Mr. Landsberg estimates the production of the United States at about 110,000 metric the United States at about 110,000 metric tons, and disregarding the production of Mexico, South America, Canada and Australia as inappreciable, the production of the world may be considered to be somewhat over 400,000 tons. According to this statement the United States occupy second place in the list of lead-producing countries.

A NEW DIRECT PROCESS.

A new process has been patented by Mr J. C. Bromfield, of Brighton, England, for making iron and steel direct from the ore, and which, it is said, has been spoken of favorably by no less authority than Sir Henry Bessemer. Besides the main feature of the direct manufacture of the metal, the sub-products, notably the furnace gases, are saved and utilized. Mr. Bromfield mixes pulverized coal and iron ore in proportions pulverized coal and iron ore in proportions varying, of course, with the nature of the materials, and when much silica is present, alumina with or without carbonate of lime is added. At the same time he extracts a mucilage by hydraulic pressure from seaweed steamed in a close-jacketed boiler. The powder and mucilage are intimately mixed with Portland cement, carbonate of lime, preserved lime or calcium oxide in preserved. with Portland cement, carbonate of lime, magnesia lime or calcium oxide in proportions varying with the nature of the ore; and this mixture is formed into bricks by a powerful press. When dry, the bricks are coked in a retort, whereby their sulphur and phosphorus are driven off. The gases are led through an hydraulic main and utilized, without the resistance of the resistance of the combustion of the resistance. either for maintaining the combustion or for illuminating purposes, in which case the by-products are also turned to account. by-products are also turned to account.

After coking, the bricks are ready for the smelting furnace, and, as it is claimed, produce a high class of metal, from which practically the whole of the phosphorus and other injurious elements of the raw materials have been expelled. rials have been expelled.

Elevated Railways in Liverpool.— An elevated railway along the line of docks of Liverpool, England, which has just received the sanction of both Houses of Parliament, is an undertaking of a novel and unique character in railway construction. The Liverpool docks stretch along the frontage of the River Mersey to the length of upward of seven miles, from north to south, and the intended railway will run parallel to the docks on a high level above the ground line to their entire length. Communication will be established between the two densely populated localities at the extreme north and south ends of Liverpool, and stations will be erected at different points within those portions of the city immediately contiguous to the line of docks. The line will carried on piers and columns at elevations of from 50 to 20 feet above the roadway, and will pass over thoroughfares leading from the interior of the city to the river.
The Corporation of Liverpool and the Dock The Corporation of Liverpool and the Dock Board have agreed that in the construction of the railway the latter body shall erect several bridges at different point of specified width. There are no less than-six of these bridges within the city boundaries, the spans varying from 50 to 60 feet. The Dock Board have also entered into a like arrangement with the Corporation of Bootle for erecting six bridges within that borough. The railway which is to be constructed is a double line throughout, is estimated to cost about \$3,200,000 for construction only, no purchases of land or compensation being required. The fares to be charged are about required. The fares to be charged are about 6 cents per mile for first-class passengers, 4 cents per mile for second-class and 2 cents scribers with an excellent self-binder for per mile for third-class. The Dock Board their papers, a cut of which is annexed. are empowered under the bill to borrow the We call attention to the low prices at which whole amount required for the construction of the road, and passengers only are to be carried, the railway not being in any sense a

Mr. Thomson, the British Consul at Monte Video, in Uruguay, points out that with the exception of a French company, which is now working the mines at Cunapira, all the

industrial enterprises of any importance in the Republic are in English hands. Rail-ways, tramways, telegraphs, banks, docks and gas and water supplies have been estab-lished by English capital and are handled by the English. In the rural districts extensive the English. In the rural districts extensive tracts of land were some years ago owned by the English, but the number which have made a specialty of this pursuit has of late decreased considerably. The constant liability to losses by pillage deters even the wealthiest farmers from investing in valuable stock and from importing an developing a more extensive and more required. ing a more extensive and more remuner ative breed of horses, cattle and sheep.

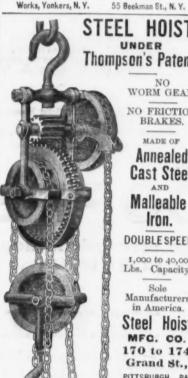
A curious piece of artillery has arrived at Windsor Castle, England. The weapon, which is believed to have come from some Windsor Castle, England. The weapon, which is believed to have come from some Eastern country, has seven barrels, the bore of which is rather larger than those of ordinary rifles, laid horizontally upon a wooden carriage, the central one being larger than the rest. At the breech is a groove for a train of powder to the touchholes, so that all the barrels can be discharged simultaneously



CIDER AND WINE MILLS. \$15. \$18, \$22.50, \$30, List.

S15. S18, S22.30, S3w, Links, S2 to S. Serews, wrough: and cast fron, \$3 to Serews, when and Clider, \$5 to \$50. Coped Cutters sell better than any other styl are easily and cheaply kept in order, and we the best satisfaction. The copper does better a mail is more durable than rawb

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We are now prepared to supply our sub scribers with an excellent self-binder for it is offered. Addres all orders to

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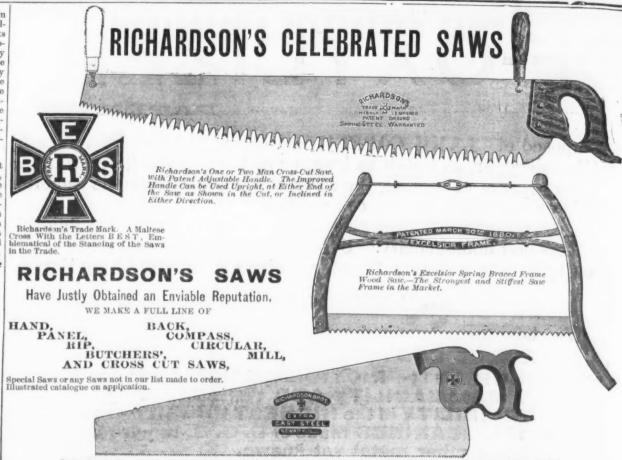
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Richardson's No. 7 Hand Saw, Cast Steel, Beech Handle, Polished Edges, Brass Screws, Rubbed Blade, Etched and Warranted

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ONE OF THE VERY BEST TOOLS EVER INVENTED.

It combines greater Strength, Convenience and Durability than was ever obtained in a Common Driver. Sells readily and gives Perfect Satisfaction.



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Capacity of Works, 650 Barrels per day. HEAVY MACHINERY and FINE STOVE PLATE FACINGS A SPECIALTY. CINCINNATI, OHIO, U. S. A

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Handles and Spokes, 79 Reade Street and 97 Chambers Street, HARDWARE COMMISSION MERCHANT.



STEPHENS PATENT VISE.

The most durable, and the only solid quick-working Vise, with automatic taper jaw at-

Will very soon pay for itself, in saving of For sale by the trade.

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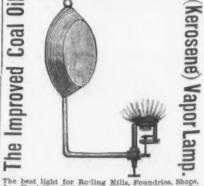
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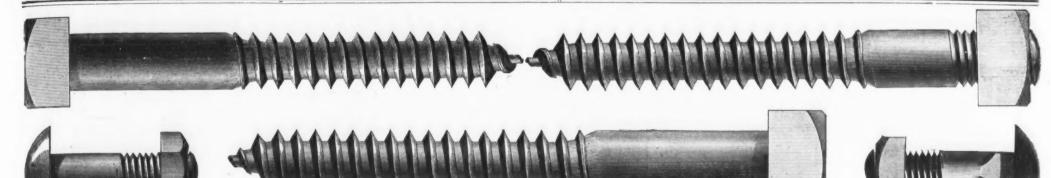
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DIES,
and Special Tools for Tin Can Makers and
Sheet Metal Workers.

Send for Catalogue and Price List.

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Sole Manufacturer,
Ashland, Ohto.
It for \$1.50. Send for a count to the trade.
Will furnish a sample dozen to the trade during the month of January at the low price of \$9. And Special Tools for Tin Can Makers and



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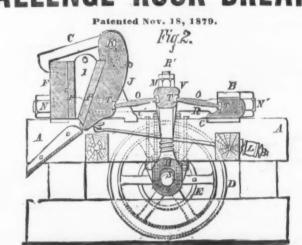
Shovels, Spades, Scoops, Coal Hods, &c.,

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THE NEW BLAKE CRUSHER,

BLAKE'S CHALLENGE ROCK BREAKER.



The most economical and reliable Crusher in use. Superior in all respects to our old style Blake Crushers, and rapidly superseding them and all imitations. For railway ballast, Macadam road making, and crushing of ores of all kinds it has no competitor. This machine dispenses with cast iron frame and pitman of our old forms. All strains

are on wrought iron or steel. Awarded medals of superiority by judges of American Institute Fair, New York City, 1879 and 1880, where it was exhibited in competition with our old forms of Crusher. Address,

BLAKE CRUSHER CO.,

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Cor. EASTON & BARTON Sts.,



SHULTZ BELTING COMP'Y.

Shultz Patent Fulled Leather Belting And Lace Leather.

Our BELTING is made of Leather, tanned on the surfaces only; the interior (which is the Fibre and strength of the hide) is not tanned, but Rawhide fulled and softened by our patented process. Our Belting is more phiable, and hugs the pulley better, and transmits more power than any other belt. Our Rawhide Lace Leather, and Belt Grease, are the best in use.

VALVES FOR FURNACES and IRON WORKS.

We make out of our Patent Leather, Valves for furnaces which we claim last five times as long as other. We will furnish for trial \$5.00 worth, without charge, to each of the first ten parties send us sizes. We also send a useful little book on Belting free, on application. Agents in all important

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CHOMWELL & CONGDON, Baltimore,
UNION PACIFIC RAILROAD, Omaha, Neb.

The right to manufacture and sell in several c.ties and States for sale



THIS RAZOR STROP

is made up throughout of only the very best selected material, such as the practical experience of years has satisfied the inventors alone can be used in its construction with a certainty of standing the test of time.

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We like the "Salem" Bucket. Ship us 55 more at



tion in every respect than any other Bucket made.

SAMPLE MAILED FOR 15 cents (stamps.) W. J. CLARK & CO., Sole Mfrs.,

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JOHN KEPPELMAN, Reading, Pa., Herewith gives notice that he has opened a Job-bing Foundry, and is ready to receive orders for all kinds of Light Gray Iron Castings; also, for every description of Machinery. Orders promptly

every description of Machinery. Orders passages filled. Please address JOHN KEPPELMAN, Cor. 2d and Court Sts., Reading, Pa

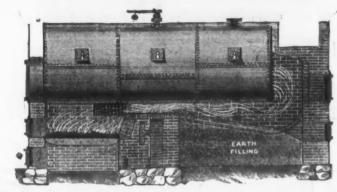
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Hydraulic Elevators for Passengers or Freight.
Hydraulic Double Acting Dumb Watters. Hydraulic Elevators, N. B.—Steam Elevators altered to Hydraulic Elevators. FLAGLER, FORSYTH & BRADLEY, Agents, 298 Broadway, New York.

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The same principle as the SIEMENS PROCESS OF MAKING STEEL; utilize the waste es with hot air on top of the fire.

Will burn all kinds of Waste Fuel without a blast, including screenings, wet peat, wet hops, sawdust, logwood chips, slack coal, &c. Send for circular.

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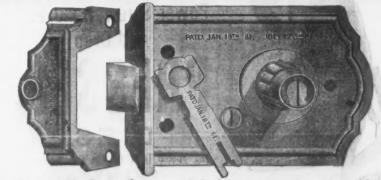
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Recognized Standard of the World for Cleaning the Nickel Plates on Modern Stoves,

Upon many of which there is more Nickel than iron surface to clean. It is also sold with the guarantee that it is the

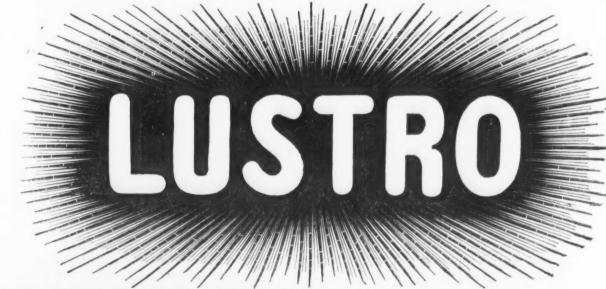
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At a small fraction of their cost, and can be used for an almost endless variety of pur-

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EMERY CLOTH, EMERY AND FLINT PAPER, RUBY, CORUNDUM, EMERY AND QUARTZ. RAW HIDE LACE LEATHER AND BELTING. Glue, Nickel Anodes, Crocus, Rouge, Composition

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Once in Motion it Requires no Attention.

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The Boss Lemon Squeezer.

Malleable Iron and

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MONTPELIER, VT., MANUFACTURERS OF DOUBLE-ACTING SPRING BUTTS,

SABIN'S LEVER DOOR SPRINGS, For heavy doors, BOSS AND CROWN SPRINGS, For light doors. Send for Catalogue

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AND-SELF-LOCKING SCREW CASE.

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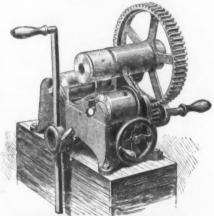


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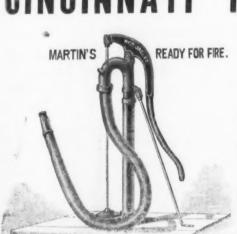
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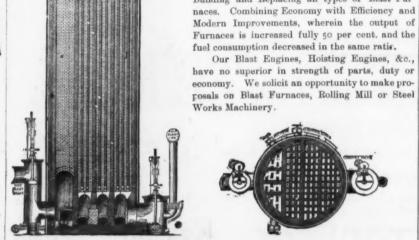


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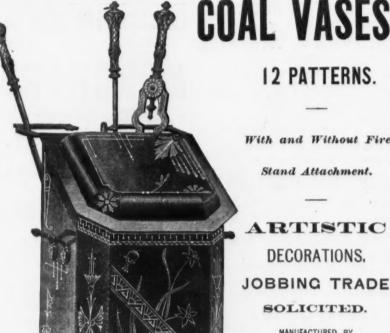
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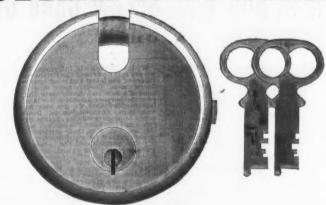
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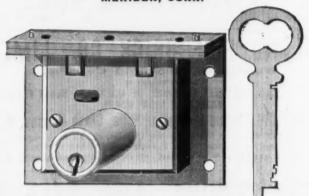
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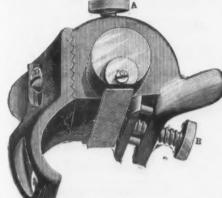
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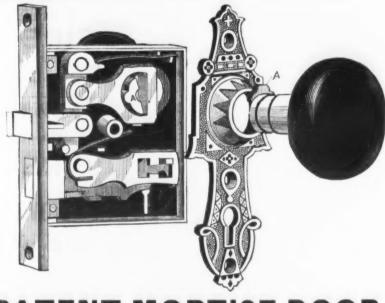
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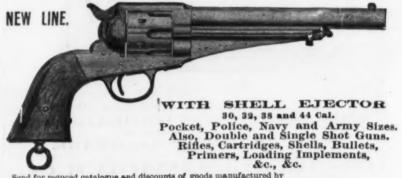
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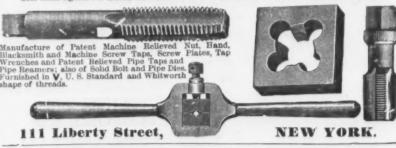
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	Shoveis. Spades and Scoops. Griffiths Geo., Phila. Ph
	Payn, Pettebone & Son, Wyoming, Pa
	Smelting Works. Philadelphia Smelting Co., Limited, Philadel, &ls., 27 Reeves Paul S., 760 South Broad, Phila
	Speiter. Speiter, Paul S., 700 South Broad, Phila
	Hernshelm L., 20 Nassau, N. Y
	Cary & Moen, 24 W. 29th. N. Y. Gautter Steel Department of Cambria Iroz. Jo. J. Lohnstown, Pa. Rowland wm. & Harvey, Frankford, Phila. 3, 33
	Johnstown, Pa. 34 36 Rowland Wm. & Harvey, Frankford, Phila. 52
	Steam Hammers, &c., Makers of. Dienelt & Eisenhardt, Philadelphia, Pa 42 Dudgeon Richard, 24 Columbia, N. Y
	Steam Pumps, &c., Manufacturers of. Crane Bros, Mrk. Co., Chicago, III. Actiowan Jona H. & Co., Cincinnati, O., So., Sterer G. W., Can, St., Phianelbina. The Norwalk Iron Works Co., So. Norwalk, Ct., 44
	Storer G. W., 122 N. 3d. Philadelphia
	Steam Traps, Curtis Regulator Co., Boston, Mass
-	Steel Importers. Abbott Jere & Co., New York and Boston. 15
	Montgomery & Co., 105 Fullon, N. Y. 4.7 McCoy & Sanders, 132 Duane, N. Y. 27 Pierson & Co., 24 Broadway, N. Y. 4
	R. H. Wolff & Co., 93 John, N. Y
2	Minol Manufacturers
2	Albany & Rensselaer Iron & Steel Co Troy, N. Y. 44 Chrome Steel Works, Brooklyn, N. 44 Cleveland Cruelble Steel Co., Cleveland, O. 45 Cleveland Cruelble Steel Co., Cleveland, O. 45 Cleveland Rolling Mill Co., Cleveland, O. 44 Gauttler Steel Department of Cambria Iron Co.
4	DOMESTIC N. 1. 1 305.44
)	Jersey City Steel Works, og John, N. Y. 6 Linden Steel Co. (Ld., Pittsburgh, Pa. 45; Midvale steel Co., Nicetown, Phila., Pa. 66; 44 Miller, Metcalf & Parkin, Pittsburgh. 44 Napior & Co., og John, N. Y. 49 Pennsyvania Steel Co., 28 S. 4th, Phila. 6 Philadelphia Steel Co., 28 S. 4th, Phila. 52 Sanderson Geo. & Co., 50 Gold, N. Y. 44 Shoenberger & Co., Pittsburgh, Pa. 44 Shoenberger & Co., Pittsburgh, Pa. 44 Smith, Sutton & Co., Pittsburgh, Pa. 44
	Napior & Co., og John, N. Y Pennsyivania Steei Co., 26 S. 4th, Phila. 4 Philadelphia Steei Forge, Philadelphia. Pa
3	Rowland Wm. & Harvey, Frankford, Phila
	Shoenberger & Co., Pittsburgh, Pa. 4 Smith, Sutton & Co., Pittsburgh, Pa. 41 Singer, Nimick & Co., Pittsburgh, Pa. 45 Spang Steel and Iron Co., Limited, Pittsburgh, Pa. 45 Spencer John & Son, Sheffeldi, England. 5 Wardiow S. & C., Sheffeldi, England. 5
5	
7	Steel Spiral Springs, Manufacturers of Cary & Moen, 234 W. 29th, N. Y. Chatillon John & Sons, of and of Cliff, N. Y.
9	Stocks and Dies. Armstrong F., Bridgeport, Ct
2	Strops, Razor.
7	Stove Boards, Manufacturers of. Ansonia Brass and Copper Co., 10 & 21 Cliff N V 2 of a
1	Stove Repairs. Metzner W. C., Chicago, Ill
2	Tucker & Dorsey, Indianapolis, Ind
9	American Tack Co., Fairbaven, Mass. 8 Cobb & Drew, Plymouth, Mass. 1 Field A. & Sons, Taunton, Mass. 1
5	Tacks. American Tack Co., Fairhaven, Mass
	Manning, Maxwell & Moore, In Liberty, N. V 8 Wiley & Russell afg. Co., Greentielo, Mass
1 2	Olsen Tinius & Co., Philadelphia, Pa
1	Tire Upsetters. Little Giant Mfg. Co., Millport, N. Y. 42 Trombly E. G., Flattsburgh, N. Y. 34 Tobnece Cutters. Adams F. F. & Co., Limited, Eric, Pa. 16
5	Tools Machanics
1 1	McCoy & Sanders, 43 Chambers, N. Y
0	Tools, Steam and Gas Fitters. Ashcroft Mfg. Co., 111 Liberty, N. Y. 34 Eaton, Cole & Burnham Co., 58 John, N. Y. 9 Torches.
5	Torchest
069	Penfield Block Co., Lockport, N. Y. Try Squares, Bevels, &c., Makers of,
7 7 7	Try Squares, Hevels, &c., Makers of, Disston Henry & Sons, Phia
	Tubes, Seamless. Charles H. Beslev & Co., Chicago, Ill
-	R. T. Deakin Philadelphia, Pa. 42 Tubing. 42 Tubing. 42 Herohant & Co., 525 Arch, Phila
	Tuyere Irons.
-	Twist Drills, Makers of. Morse Twist Drill & Mach. Co., N. Bedford, Mach.
	Valves. Gas. Water and Steam. Ludiow Valve Mfg. Co., Troy, h. Y. The Eddy Valve Co., Waterford, h. Y.
2	Varnishes and Japans. Howell Chas. H. & Co., Philadelphia
	Boker Hermann & Co., to: Duane, N. Y
2000	
-	John C. Jewett & Sons, Buffalo, N. V
	Bowler & Co., Cleveland, O 6 Whitney A. & Sons, Philadelphia
	Pike A F Pike Station N H
-	White Lead. Brooklyn White Lead Co., 182 Front, N. Y. 36 Colgate Robt. & Co., 287 Pearl, N. Y. 36 Jewett John & Sons, 182 Front, N. Y. 36 Lewis John T. & Bros., 212 S. Front Phila. Pa. 25 Salem Lead Co., Salem. Mass. 30
	Lewis John T. & Bros. 24 S. Front Phila. Pa
-	Hyde Ayer & Co., Springfield, Mass
	Hugunia R. B., Hartford. Ct
	Wire, Manufacturers or, Cary & Moen, 244 W, 20th, N. V
	Wire, Manufacturers or. Cary & Moen, rat W. rath, N. Y. Cleveland Rolling Mil Co., Cleveland, Ohlo og Gautter Steel Department of Cambria Iron Co., Johnstown, Pa
	Cleveland Holling Mill Co., Cleveland, Ohlo., 38 Gauter Steel Department of Cambria Iron Co. Johnstown, Pa
-	Howard & Morse, 14 Fulton. N. Y. Menden & Schwerte, Schwerte, Germany
	Trenton Iron co. Trenton, N. J
-	Worcester Wire Co., Worcester, Mass. 2 Wire 4-sods, Manufacturers of. E. T Barnum Wire Works, Detroit, Mich. 44 Gibert & Bennett Mrg. Co. 279 Peart, N. Y. 7 Charles G. Washburn, Worcester, Mass. 20 Wire Nalis. 20
-	Gilbert & Bennett Mrg. Co. 272 Pearl. N. Y
	Charles G. Washdurn, Worcester, Juses. 20 Wire Nation. Blake & Johnson, Waterbury, Conn. 3 Field A. & Sons. Taunton, Mass. 9 HP. Nati Co., Cleveland, Ohlo. 40 Wire Rodm.
1	Wire Rods. A. C. Leslie & Co., Montreal
1	Broderick & Bascom. St. Louis, Mo. Hazard Mfg. Co., Wilkesbarre, Pa
1	Liscaen A. & Son, St. Louis, Mo. 2 Wire Streichers, Samson Novelty Works, De Kalo, III. (7 Wood-Working Machinery, Goodell & Waters, Philadelphia 26 H. B. Smith Machine Co., Philadelphia 36 Wrenchess, Manufacturers of, Bennis & Call Hdw. & Tool Co., Springfisld, Miss. 405 41 Cons A. G. & Co., Worcester Mass. 26 Cons L. & Co., Worcester Mass. 27 Collins & Co., Water, N. 45 Vringers. 27
-	Goodell & Waters, Philadelphia Pa. 20 H. B. Smith Machine Co., Philadelphia. 26 Wrenchess, Manufacturers of. 25
	Bemis & Call Hdw. & Tool Co., Springfield Mass. 402 41 Cons A. G. & Co., Worcester Mass
-	Collins & Co., Water, N. Y
	C. E. Newman, Richmond, Ind

NEW YORK WHOLESALE PRICES, August 2, 1882.

METALS. 184N — DUTT. Bars, 1 to 15c. \$\psi\$ \$\psi\$; Sheet, Band Joop and Scroll, 154 to 15c. \$\psi\$ \$\psi\$; provided, that none of the above Iron shall pay a less rate of duty than \$\psi\$ per cent. \$Pig. \$\psi\$ \$\psi\$ ton; Polished Sheet, gc. \$\psi\$ b vrought Scrap, \$8\$ \$\psi\$ ton; Cast Scrap, \$6\$ \$\psi\$ ton, Rail road, roc. \$\psi\$ 100 h. Boller and Plate, 15gc. \$\psi\$ h. American Iron. Foundry, No. 12. Foundry, No. 22. Gray Forge. Ecotch Iron. Eglinton. # ton 23.75 @ 24.00 # ton 27.00 @ 27.50 # ton 25.50 @ 26.00 # ton 26.50 @ 27.00 arnbroe (to arrive) Ralls. o'NELLE FATENT FLANISHED COFFEE.—Net. 14x8. and 16 os. and heavier. * \$\psi\$ 350 By the case. \$\psi\$ 360 os. and lighter... \$\psi\$ \$\psi\$ 400 " \$\psi\$ \$\psi\$ 390 Botter Sizes. 1n. 14x5. \$\psi\$ ns. 14x5. \$\quad 0\$ in. 14x50. 44 and 16 os. and heavier. * \$\psi\$ 350 by the case. \$\psi\$ 350 (And all sizes not over 20 in. wide.) All Nos. not thinner than to No. 28, wider than 2 n. not wider than 14 in... All Nos. to No. 28, inclusive, and widths over 14 to 20 lusive... to No. 28, inclusive and widths over 20 to 3 LOW BRASS. c \(\psi \) more than High Brass. Gilding Metal, \(\psi \) w more than High Brass. Jin Bars. Age Platers' or Gold Metal Flaned or Polished. Square. Metal, in width 1 in. to \(\frac{1}{2} \) in. to No. 28, inclusive, 10 \(\psi \) in. Metal, in width 2 in. to 1 in. thinner than No. 28, 20 P B advance. Metal, in width 1 in. to 14 in. thinner than No. 28, 30 P B metal, in which in. 50% in. thinner than No. 28, 50 % advance. Metal in width ½ in. to ½, inclusive, not thinner than No. 28, 20 % advance. Metal, in width ½ in. to ½ thinner than No. 28, 50 % advance. Metal, ¼ in. in width and less, 100 % B advance. Any of the above widths cut to particular lengths, add 70 % B. The above winted to the bound of the above winted to the bound of the 4 per cent., 12 inch to No. 26..... German Silver Sheets over 12ln. wide and weighing more than 10 B., \$2 F B. Advance 2c, for each additional inch in width above 2in. and 2c. \$2 bo neach No. thinner than Nos. 26 to \$5, inclusive. All German Silver thinner that No. 36 is Platers', at 5c. \$2 b additional. dditional. a Silver Scrap, one-half less than net price of ket Metal. German Silver Turnings. Filings a half the price of Scrap. BLASS AND COFFER WIRE. Glidbrand ass Rods, No. 8 and larger, not less than 2 feet Brass Rods, No. 5 and larger, not less than 2 feet lengths, 26. Wire straightened and cut smaller than No. 8 and not less than 2 feet lengths, 49c. Wire and Rods less than 2 feet lengths, special rates. Twelve cents per B extra for spooling on 1 B spools o No. 35. MISCELLANEOUS. MISCELLANEOUS. ngs, Filings and Chips half the price of Scrap. Net cash. Interest to be added after thirty Gays. TURING.—dis. 25 %. Plain No 20 inclusive above \(\frac{1}{2} \) in to 3 in \(\frac{3}{2} \) 4. Plain above \(\frac{1}{2} \) in \(\frac{3}{2} \) 4. Nos. 21, 22, 23, two cents advance on List for each Number. 24, 25, 26, four cents advance on List for each Number. Above No. z. special rates. Plain, ¼ Inch. Plain, ½ inch. Lio Plain, ½ inch. Lio All Mandrel Drawn Tubes, comis advance on List Prices. Fancy Tubing to No. 25 English, Scotch and Extra Patterns Fancy Tubing to No. 20

		-
	All Mandrel Drawn Tubes under % in. 25 cents per pound advance.	1
1	Plain. ZINC TUBING—dia. 24 %.	
e	GERMAN CHI VED TURINGdia ar a	
1 00	4 Per cent. 86 Per cent 99 Per	0
2		2
0	16 Per cent	
0	STEEL. DUTY: Bars, Ingots, Sheets and Colls, valued at 7c P B, or under, 244c; over 7c and not	
0 0	above 11, 3c % m; over 11, 3/6c ≈ m, and 10 % ad val. Railway Bars, 1/4c % m. Railway Bars, in part Steel,	
Ó	from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as	1
0	Fittspurgh.	1
0	English Steel. Best Cast	1
)		1
2	Best Double Shear. # 154c	1
	Sheet Cast Steel, 1st quality. \$\mathbb{\text{p}}\$ \$\mathbb{n}\$ 15\degrees 2d quality. \$\mathbb{\text{P}}\$ \$\mathbb{n}\$ 14\degrees 2d quality.	
	Sheet Cast Stock, 1st quality. # h 155gc ad quality. # h 145gc d quality. # h 125gc d quality. See Trade Report I. P. B. L. Trade Report I. P. L. Trade Report I. P. L. Trade Report I. R. Trade Report	1
	Pipe and Sheet, 24c # b. American	
	1847 70 Net	1
	State Stat	
	N P IT BABBITT METAL.	1
	N. P. U. BABBITT METAL. P B 90 A. 28c; B. 29c; C. I. T. T. T. F. Diates, Sheets Tagger and Terne, 1.10 P B; Electro-galvanized Plates, ac P B; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Phys free. Banca, subject to duty of 10 per cent.	1
	*B ; Electro-galvanized Plates, 2c *B; Manufac- tures of, not enumerated, 35 per cent. ad val. Bars, Block and Pics free. Banca, subject to duty of to	
	ber cent. Banca	
	Banca. \$\text{P } \text{ \$\text{\$\exitit{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\exitit{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\exitit{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\}\$\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{	1
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	I C 12X12 Prime Charcoal	
ı	I X 14X20 } I X 12X12, Prime Charcoal	1
1	C 12x12 FTIme Charcoal 6.50 X 10X14 Prime Charcoal 8.25 X 1X2, Prime Charcoal 8.50 D C 1245X17, Prime Charcoal 6.00 D X 125X17, Prime Charcoal 8.00 For each additional X add 2.00	
	Best. Ordinary	ı
I	C 10X14	ŀ
I	Prime Char. 2d Qual. Coke.	ľ
ı	I C 14X20	ł
l	IX 20X28 15,50 IC 20X20 10,50 IC 14X20 M F Brand	ı
i	1C 12325 M. F. Brand 7.77 @ SOLDER—1/2 & 1/2	ı
	SPELTER DUTY: In Pigs, Bars and Pites, \$1.50	I
	\$\PP\$ 100 B. American, cash	ľ
	2146 % B. Sheet, Cask	ı
l	Sheet, Open	ı
	Paper Stock, &c.	۱
	(Dealers' Selling Prices.)	ı
l	White Chief Crittings No a	١
	Mill Assorted Whites. 5% 6 5% Unbleached Muslins. 5% 6 6% 6% City Whites No. 1	ı
	New Seconds light	١
l	No. 2 Whites	ı
	Linen Canvas, No. 1. 4 4 4 4 5 Seconds, City No. 1. 154 6 2 Seconds, City No. 2. 154 6 196	-
	Colors, per 100 ms. 70 mg 90 Manila Rope. 3% mg	
	Manila Rope, Tarred. 214 (a) 214 (Gunny Bagging, No. 1. 214 (a) 214 (a) 214 (a) 214 (a) 214 (b) 214 (b) 214 (c) 214 (c	
	Gunny Haggring, No. 2. 175 @ 2 Kentucky Baggling. 414 @ 454 Burlap Bagging, No. 1. 224 @ 254	
	Burlap Eagging, No. 1 2½ 3 Tar Shakings 3 Hemp Twine Stock 4½ 4 Hard White Shavings, No. 1 4 4 4 4	
	White Shirt Cuttings, No. 2. 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
	Mixed Shavings, part white. 31/4 @ 3 Ledger and Writing. 3/4 @ 3/4 Solid Stock. 21/4 @ 3	
	Book Stock, No. 1, light. 14 6 11/4 Old Newspapers #6 6	Print.
		TO BUR
	Binders' Board Cuttings 11/4 6 1/4 Straw Board Cuttings 1	115/211
	Paints Oils for	
	Paints, Oils, &c.	1

Metal. is width and less, toe \$\psi\$ badvance. Metal. \$\frac{1}{5}\$ in. in width and less, toe \$\psi\$ badvance. Metal. \$\frac{1}{5}\$ in. in width and less, toe \$\psi\$ badvance. Metal. \$\frac{1}{5}\$ in. in width and less, toe \$\psi\$ badvance. Market Metal. Wire Any of the above widths cut to particular lengths, add \$\text{c} \psi \mathbb{B}\$. Any of the above widths cut to particular lengths, add \$\text{c} \psi \mathbb{B}\$. Any of the above widths cut to No. \$\text{c} \mathbb{B}\$. GERMAN SILVER MARKET METAL AND WIRE. Market Metal. Wire \$\frac{1}{6}\$ inclusive. \$\frac{1}{6}\$ inclusive. \$\frac{1}{6}\$ inclusive. \$\frac{1}{6}\$ inclusive. \$\frac{1}{6}\$ inclusive. All German Silver Sheets over 12 in. wide and weighing more than 10 \$\psi\$, \$\psi \psi \mathbb{B}\$. \$\frac{1}{6}\$ inclusive. \$\frac{1}{6}\$	'd cans, iic; kegs, 8e
GERMAN SILVER MARKET METAL AND WIRE A POF Cent., 12 inch to No. 26	'd cars, iic; kegs, 8e
GERMAN SILVER MARKET METAL AND WIRE Approach, 12 inch to No. 26 & 5.	'd cans, iic; kegs, 8e
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Wire. Brass Rods, No. 8 and larger, not less than 2 feet lengths, 36c. Wire straightened and cut smaller than No. 8 and not less than 2 feet lengths, 43c. Wire and Rods less than 2 feet lengths, special rates. Twelve cents per % extra for spooling on 1 % spools of No. 36. Brass Pall Ears. Brass Pall Ears. Brass Door Rail SCRAP.—Net. Wintle Lead. American, Dure in White, Jerus, English, prime. Yellow Cehre, French, in oil, as Yellow Cehre, Nermont. Yellow Chreme, the Yellow Chrome, in oil, as Yell	
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Twelve cents per B extra for spooling on 1 B spools o No. 36. MISCELLANEOUS. Brass Pall Ears. Brass Door Rail SCRAF.—Net. Wellow Chrome, in oil. Zine White, American No. 1, dry Zine White, American No. 1, dry Zine White, French (Parls) dry. Zine White, French (Parls) dry. Zine White, French (Dir.)	17 @ 27C
o No. 36. Brass Pall Ears Scrap.—Net. Scrap.—Net. Zine White, American No. 1, in Zine White, American No. 2, in Zine White, American No. 2, in Zine White, French (Paris) dry. Zine White, French (Paris) dry. Zine White, French in Oliv.	14 @ 18 @ 250
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Prices. Mineral Wool, ordinary	
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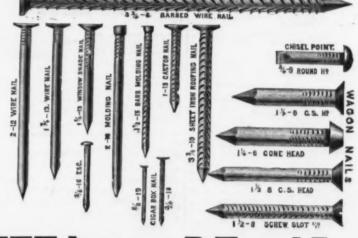
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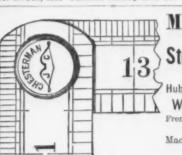
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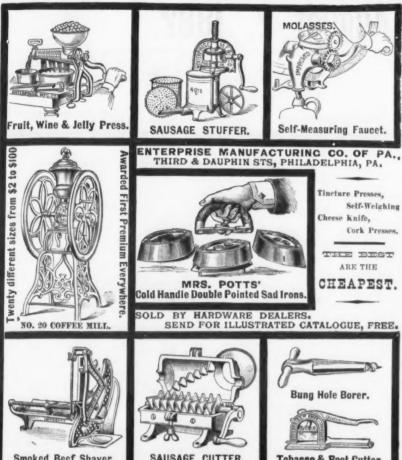
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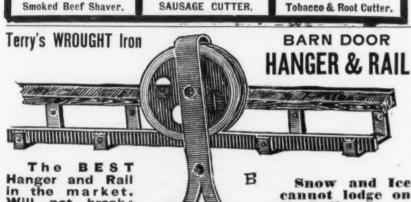
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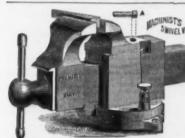


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140	7 1	•	
HARDWARE.	B	ought Bro	-
	Car	rought Brast Brass, T st Brass, C st Brass, L st Joint, N st Joint, B	ieb
A nvils. Eagle Anvils, American.	re Fas	st Joint, N	arr
Trenton 108 Wilkinson's 108	ic Loc	st Joint, B bse Joint, bse Joint, bse Joint, cliament E yer's Hing bse Pin, no bse Pin, Ac bse Pin, Ac	Jap
Anvil Vise and Drill.	- Do	ose Joint, rliament E yer's Hing	lap lutt
Augers and Bits.	Loc	ose Pin, no ose Pin, Ac ose Pin, Ac	COLL
Douglass Mfg. Co	Loc	se Pin, Ac	ort
Beecher (French, Swift & Co). Jan. 7, 188 Gr'-wold	o. Fas	t Joint, Note t Joint, Let Joint, Let Joint, Bose Joint, I de Butts, I de Blind, de Plin, Wese Pin, Ling Hinger	. N
Schles Mfg. Co. Snell Mfg. Co. Warrous & Co. Extension Lip. dis 35	Tab Insi	de Butts, I	Bac
Cook's Dourless Mfg. Co	Loo	se Pin, W	rt
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand Rail Bits. dis 10&10&10 Russell Jennings' Augers dis 10% 210% 10% 10%	Sa Sa	eer's Sprin	ig a
Russell Jennings' Car and Machine Bits, Boring Ma- chine and Millwright's Augersdis 25.108.108.108.108.108.108.108.108.108.108	S U	nion Spira	l Si
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 £xpansive Bits, Clark's, small, \$18; large, \$26dis 25; £xpansive Bits, Ives	Blin	uckman's	arl
Expansive Bits, Parmelee's	Blin	ommer's uckman's ud Butts, I d Butts, I d Butts, S d Butts, S	eyr Sh
Mollow Augers, French, Swift & Co	Blin	d Butts, S	hep
gollow Augers, Stearns' Adjust. & doz. \$48 - dis 20×10. Hollow Augers, Ives' Expansive, each \$4.50 - dis 30×10. Hollow Augers, Universal Expan., each \$4.50 - dis 20	Blin Blin	d Butts, I. d Rutts, N. d Butts, P. d Butts, C. d Butts, S. d Butts, S. d Butts, R. k is Impro	ich
Wood's dis 25 Gimlet Bits. \$7.50 F gross, dis 50 Gimlet Bits, Diamond F doz. \$1.10, dis 25%10	Blin	d Butts, S. d Butts, S. d Butts, B.	arg
Combie Cut Gimlet Bits, Shepardson's dis 40 Double Cut Gimlet Bits, Ct. Valley Mfg. Co.dis 30&10	Clar	k's Impro)Ve(
Double Cut Gimlet Bits, Hartwell's dis 50&10 Double Cut Gimlet Bits, Douglass' dis 40 Double Cut Gimlet Bits, Ives' dis 50 dis 50	Hun	nason, Becent & Co.	kle
Millers Falls CO. \$28.00. dis x& Concey Anvil and Vise dis x& Augers and Bits. Conn. Valley Mfg. Co. dis x& Augers Mfg. Co. Douglass Mfg. Co. dis x& Co. Gurphreysville Mfg. Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Bee-her (French, Swift & Co. from list of twee. Beel Mfg. Co. from list of twee. Beel Mfg. Co. from list of twee. Beel Mfg. Co. from list of twee. Bussell Jennings Mg. Co. dis xo. dis xo. from list of twee. Beel Jennings' Car and Machine Bits, Boring Machine and Millwright's Augers. dis xo. from list of twee. Beel Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. s Jennings' Bits. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from list of twee. Beel Mfg. Co. dis xo. from li	Hun Brad	ntcher's nason & Be lley's	Cleek
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lewing, Brass Ferrule. \$3.00 P gross—dis 40&to pagent Sewing, Short. \$4.00 P doz—dis 40&to pagent Sewing, Long. \$4.00 P gross—dis 40&to pagent Fee, Plain Top. \$10.00 P gross—dis 40&to pagent Peg, Lenther Top. \$2.00 P gross—dis 40&to pagent Peg. Peg. Peg. Peg. Peg. Peg. Peg. Peg.	Ca	1 2 16.0 19.0 n Opene dessenger rican	s C
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wis, Sewing, Common	No. 6 Eure Sard	an's. French. Fron Harka ka. ine Scisso	ndle
A wis, Brad Sets, &c. Awis, Swing, Common \$\tilde{g}\$ gross \$1.70-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ wils, Shouldered Feg \$\tilde{g}\$ gross \$2.45-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ wils, Shouldered Feg \$\tilde{g}\$ gross \$62-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ wils, Factor \$67-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ wils, Shouldered Brad \$\tilde{g}\$ gross \$2.70-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ wils, Handled Brad \$\tilde{g}\$ gross \$-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ wils, Handled Bratch \$\tilde{g}\$ color \$\tilde{g}\$ gross \$-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ wils, Socket Seratch \$\tilde{g}\$ color \$\tilde{g}\$ gross \$-\tilde{d}\$is 2.5k10 \$\tilde{g}\$ true \$\tilde{g}\$ stantage \$\tilde{g}\$ \$\	Star. Spra	gue, No. 1	. 87
will, Socket Scratch \$1.05 & \$1.25	Univ	Vorids Be	****
and Sets, Stanley's Excelsior, No. 2, 84.80 dis 30210 3 and Sets, Stanley's Excelsior, No. 2, 84.80 dis 30210 3 ad Sets, Stanley's Excelsior, No. 3, 87.80 dis 30210 5	Ca		
Axes. Single Bit, 414 to 04 and under	F. I	ps—Perc s & Goldn L. Waterp B. Trimme B. Ground tol Water sket Caps . C. F. C. C., F. L. s C. Cen. f C. Doubl	roo
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Hand, Silver Chime. dis 20&10 \$\frac{1}{2}\$ Hand, Globe (Cone's Patent). dis 25&10 \$\frac{1}{2}\$ Gong. Abbe's. dis 25&10 \$\frac{1}{2}\$	Cast	rpet Str Steel, Poli Iron, Steel	etc
Gong, Yankee	Con	***************************************	
Gong Abbe's	Bed Plate Deep	and Shall Socket n's Paten	ow
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Pull, Western dis 25% to % Call dis 25 % Cow, Common Wrought dis 55% to % dis 55% to % 55% to %	Trace	7-10-2	Will.
You. Western. Sargent's new list. dis 5,5% to \$ Cow. Western. Sargent's new list. dis 5,6% to \$ Cow. Western. Sargent's new list. dis 5,6% to \$ Cow. Kentucky. Star' tis 2,6% to \$ Cow. Kentucky. Sargent's new list. dis 5,5% to \$ Cow. Low. Cow. Cow. Cow. Cow. Cow. Cow. Cow. C	Germ Cover Oneid	an Coil, lis t Halter, l a Halter (Hite
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Nos. o 1 1½ 2 3 4 5 6 Hog dis 50 % 812.00 10.00 9.00 8.00 00 5.00 3.50 2.50 5.00 dis 40 % ow, Texas "Star"	White Red	nlik.	
	Blue.		****
Bolders	Socke Socke Socke	e Crayons. sois. t Framing t Framing t Framing t Framing t Framing t Framing t Firmers, t Firmers, t Firmers, t Firmers, t Firmers, t Firmers, t Tirmers,	, Ci
. Belting and Packing Codis	Socke Socke	t Framing t Framing t Framing	, M W
Bit Holders. F doz \$15,00—dis 40% 5 % Extension, Ives' F doz \$15,00—dis 40 % Diagonal F doz \$24,00—dis 40 % Angluar F doz \$24,00—dis 40 % Blind Adjusters.—Domestic. F doz \$24,00—dis 40 % Excelsior F doz \$10,00—dis 15 %	Socke Socke	t Firmers, t Firmers, t Firmers,	Cr. Ar Bu
Angilar	Socke Socke Socke	t Firmers, t Firmers, t Firmers,	Wi Do
Blind Fasteners. ### Water Programmer ### Water Pr	Socke fange Tange	t Corner d Firmers d Firmers d Firmers d Firme	, Bı
Van Sand's, Old Pattern14, 88; 154, 88.50 ½ gro. net Washburn's Old Pattern	fange fange	d Firmers	Bi
Salisbury & Austin, No. 2008	Iron, I	Adjustable Adjustable	8, G
Blind Staples. Bar bed, ¼ in. and larger	Iron, A	mps. Providenc Adjustable Adjusta	8, H
Blocks. Penfield Block Co., W. I. C. bushed Penfield Block Co., W. I. all steel roll'r. Penfield Block Co., W. I. all steel roll'r. Seafield Block Co., L. & I. Sheaves dls 408 10 \$\frac{1}{2}\$\$ dls 408 10 \$\frac{1}{2}\$\$ dls 408 10 \$\frac{1}{2}\$\$	Iron. (Carriage M	lak
Penfield Block Co., L. & I. Sheaves	Super	ior	
	Coc	keyes ks, Bras ng, new li	6.
Jast Iron Barrel, Shutter, &c. dis coëro 5 Last Iron Chair (Sargent's list) dis 6cêro 5 veel Pat, Door Boits dis 5cêro 5 Wrought Barrel dis 5cêro 5 Wrought Square dis 5cêro 5	Plain	Ribbs, nev	v H
Wrought Barrel dis cate of Wrought Square. All so the Wrought Square and Front Stanley's list. dis cate of Wrought Shutter, Brass Knob, Stanley's list. dis cate of Wrought Shutter, Brass Knob, Stanley's list. dis cate of Wrought Shutter, Sargent's list. dis cate of Wrought Shutter, Sargent's list. dis cate of Wrought Shuk Flush, Sargent's. dis cate of Wrought Shuk Flush, Stanley's. dis cate of Wrought Shuk Flush, Stanley's. dis cate of Wrought Sh. F. Flush, Com'n. Stanley's. dis cate of Wrought Sh. F. Flush, Com'n. Stanley's. dis cate of Wrought Sh. F. Flush, Com'n. Stanley's. dis cate of Wrought Sh. F. Flush, Com'n. Stanley's. dis cate of Wrought Sh. F. Flush, Com'n. Stanley's. dis cate of Wrought Sh. Flush, Com'n. Stanley's. dis cate of Wrought Sh. Flush, Com'n. Stanley's. dis cate of Wrought Sh. Flush, Sh. Flus	Board	d Beer, ne ee Mills and Box	
Wrought Sunk Flush, Sargent'sdis 6.&10&10% Wrought Sunk Flush, Stanley's	Amort	a's 's Pat can (Enter	e e a a
arriage and Tire, Common	The "S Webb'	Swift" (La swift" (La s Patent	ine
Thion Carriage dis 70% L. B. & W. Carriage(old list) dis 55% Tre, Am. Screw Co.'s, Phila, new list, Nov 1, '71 dis 75%	Con	ipasses.	Di
Tre, R. B. & W., new list	Calipe:	rs	
& E. Mfg. Co. dis 10 \$ 10 \$ 10 \$ 10 \$ 10 \$ 10 \$ 10 \$ 10	Bemis Bemis	& Call Co. & Call Co. & Call Co. & Call Co. & Call Co.	's C
10 10 10 10 10 10 10 10	Bemis Bemis Excels	& Call Co. & Call Co. dors Patent	's (C
Howev von the work of the work	Bradle	pers' To	ois
Inst quality, no Augurs	Corl	kscrews.	-Н
Boxes.	Wadsw	n Knive	6 B
S. Hackus	Cast St Iron, S	eelteel Point	s
dis 40% 5 pofford's Patent dis 50% 5 posf 'Patent Braces dis 50% 5 dis 50% 5	Curling Curling	ing lrou (in., \$1.80, g Tongs	2.0
BFRCCS Gls 50	Particitii	DE LFORB	
uffalo Ball dis 30 % Brackets. dis 40 %	Hotchk Hotchk Lawrer	new list. diss, Novel diss, Exclr dee "Perf	. Su
melf, fancy dis 55&10 % helf, fancy dis 55&10 % eading dis 55&10 %		ain Pine d Glass Enamel	
Bright Wire Goods list of Dec. 15, '79. dis 55&10 2	Cuth	ery.	Co
Buil Rings. nion Nut Co	Am. Mi	ery. n Cutlery ller Bro.'s on & Beck nek Cutle	Culey

w York Who	le
Hutts Wrough Brass	TO SERVICE STREET
Fast Joint, Broad dis nox Joseph Joint, Broad dis 10x Josep Joint, Broad dis 15x Table Butts, Back Flaps, &c dis 10x Joseph Joint, Regular dis 10x Joseph Joseph dis 10x Joseph Joseph dis 10x Joseph	SP BOR
Coose Pin, Light	A COMMON A BIBLE BIT
## dis 65% and ## dis	RERESE
Bow Pins. dis coate time. Nos. c, 1. 126. 2	Mod Mod Da
'an Openera, # doz, \$3.00, dls 25 Messenger's Comet. # gross \$7.50, dls 15 merican # gross \$7.50, dls 15 uplex # doz 2cc, dls 15@2c vmnn's # doz 8cc, dls 26	Fa Ac Tri
0. 4. French # doz \$2.25, dis 55 0. 5. Fron Handle # gross \$7.50, dis 10 ureka # doz \$2.20, dis 10 ureka # doz \$2.50, dis 10 ureka # doz \$7.50, dis 15 ureka # doz \$7.50, dis 55 ureka # doz \$7.50, dis 50 ureka # doz \$7.50, dis 50 ureka # doz \$7.50, dis 10 ureka # doz \$7.50, dis	Mil Sto
tar. \$\psi \dos \text{\$\frac{8}{3}\cdot \text{\$\text{\$\grample}\$}, \$\text{\$No. 1, \$\psi_{2.00}\$}; \$\text{\$No. 2, \$\psi_{2.25}\$}; \$\text{\$No. 5, \$\psi_{2.00}\$}; \$\text{\$\text{\$\grample}\$}, \$\psi_{2.00}\$; \$\text{\$\text{\$\grample}\$}, \$\psi_{2.25}\$; \$\text{\$No. 2, \$\psi_{2.4}\$}; \$\text{\$\text{\$\grample}\$}, \$\text{\$\text{\$\grample}\$}, \$\text{\$\text{\$\grample}\$}, \$\text{\$\text{\$\grample}\$}, \$\text{\$\text{\$\grample}\$}, \$\text{\$\grample}\$, \$\$\g	Sib
omestic	Ket Sau
E. B. Ground Tr'md Edge, Central Fire, 1-10's, 700 Pistol Waterproof, extra heavy, 1-10's 31,40 Musket Caps, 1-10's 30c M. C. F. C. trimmed 50c M. C. F. L. ground 50c M. C. F. L. ground 50c	Bra Doo
	Wo Fer
1. 500 1.0 500 1.0 500 1. 500 1	Sta Vra We Met
usket, in 1-10's	Cor J. S J. S Self Self
ool	Beif F Aut
Casters. d. dis sckro- date and Shallow Socket. dis sckro- ep Socket. dis sckro- rithre Fatent (Pheonix). dis 2x	J. & J. & J. & Joh But
Cattle Leaders.	Mos
ace, 6½-10-3	New
hite	Don Gen Cro
hie Crayons	Shej ta Clar Com Buff Fi Para Fra Hay Plat Fi Ente
nged Firmers, Butcher's	"ACI
n, Providence Tool Co. 'a Wrt. Iron dis a 25 n, Adjustable, Gray's dis 205 n, Adjustable, Camp's dis 205 n, Adjustable, Show's dis 205 n, Adjustable, Show's dis 205 n, Adjustable, Show's dis 205 n, Adjustable, Stearns' dis 208 n, Cabinet, Sagnen's dis 208 n, Cabinet, Sagnen's dis 608 n Cabinet, Sagnen's dis 6	Mari Wire Wire Wire Wire Wire Wire Wire Wi
eat Hods. fiths'dis 3334 %	Doul Doul
Ockeyes dls 55 ocks, Brass. king, new list, July 10, 1880 dls 45 be, new list, July 10, 1880 dls 40 lin Hibbs, new list, July 10, 1885 dls 40 and Beer, new list, July 10, 1880 dls 40 oftec Mills. dls 45 rd and Box dls 45 son 8 dls 45 ro's Fat. 9.50, \$0.50,	Tinn Fam Fam
bb's Patent dis 45850 %	Sarg Read U. M.
dos. \$15.00. dis 30 \$ ompasses, Dividers, &c. plasses pers. dis 55 pers. dis 55 ders. dis 50 ders.	U. M. U. M. U. M. U. M. U. M. U. M. Cove
er's Patent dis 25 % copers' Toois. die 15 @ 20 % ton's dis 20 %	Chen Hart Hum Verre
orkscrews.—Humason & Beckly Mfg. Co.dis 33½ 5 gh's Wire. dis 25 orn Knives and Cutters.—Bradley's., dis 10 5 fsworth's. dis 25 row Bars. Steel. \$\pi\$ 84\co. \$\pi\$ 18 84\co. \$\pi\$ belonts. \$\pi\$ belong \$\pi\$ 25	Magr Nelso Warr Kip's Yerk Wilk
urling Irons, &c. 6. % in., \$1.80, 2.00, 2.40	Provi Provi Towe
urry Combe. b's, new list	Rogg Brond Jap'd
Press	Barn Wrou Surfa Flush Liftin Saw a
manuel and a cuttery Codia of 4	Boynt

	esale Prices,	
N. N.	Deg Collars, dis Embossed Git. dis Leather dis Brass dis Celluloid dis	40
なるななない	Door Springs. Torrey's Rod, regular size, per dos., \$3 dis 408 Grav's Rod.	15
MANNAM	Rec Rod	40
AMMM A	Warner's Gem (Coil) -	a %
"写写写写写	Sabin's Boss. No. 1, \$\pi\$ dos. \$4.00; \$, \$2.75; \$, \$2.25\$ Sabin's Crown \$\pi\$ dos \$1.50, dis 33 Philadelphia \$\frac{1}{2}\text{in.} \$\pi\$.co; \$8\text{in.} \$\pi\$.75, dis \$8\text{arker's Concealed}\$	00 13 9 35 % 8 20
***	Cowell'sNo. 1, \$16.00; No. 2, \$15.00 ¥ dos. dis Rubber, complete	90%
% % % % % % & &	Hercules	50,55000
が大名を大名	Drills and Drill Stocks. Blacksmiths' Self-Feeding. each, \$2.50, dis r Blacksmiths' Self-Feeding. each, \$7.50, dis r Breast, P. S. & W. dis 20&r Breast, Dtochkiss' dis 2	00000
Me Musu	Douglass and Drill Stocks and R. 2, 20, dis 2 Breits and Drill Stocks and R. 2, 20, dis 2 Breits and Brill Stocks and R. 2, 20, dis 2 Breast, P. S. & W. dis 20 Breast, Wilson's dis 2 Breast, Wilson's dis 2 Breast, Wilson's dis 2 Breast, Wilson's dis 2 Breast, Bartholownew's each, \$3.00, dis 2 Breast, Bartholownew's each, \$3.00, dis 2 Breast, Bartholownew's dis 2 Breast, Bartholownew's dis 2 Breast, Bartholownew's dis 2 Breast, Bartholownew's dis 2 Breast, Wilson's dis 2 Breast, Wilson's dis 2 Breast, Bartholownew's dis 2 Breast, Bartholownew's dis 2 Breast, Bartholownew's dis 2 Breast Arthology and Breast Brea	AKKAKA
28 50 10 1510	Ratchet, Weston's dis a Ratchet, Weston's Triple Action dis a Ratchet, Moore's Triple Action dis as 26 % whitney's Hand Drill, Plain, \$11.00; Adjas. \$12.00. Wilson's Drill Stocks dis a Automatic Boring Tools each \$2.25, dis as	*** ***
	Automatic Boring Tools each \$3.55, dis 26 Drill Chucks	AMM M
	and the second s	- 40
	Acme	8
	Triumph (f. & S. Mig. Co.)	* **
	Regular numbers. \$ 5. \$ 5. Regular numbers. \$ 6. Re	8
-	Ennmeled and Tinned Ware. Kettles. Sauce Fans. Clined Sauce Pans.	
1	Escutcheen Pins. Brass	%
	W00d	*
1	Puncets	MMMMM
Para manage	J. Sommer's Beag Metalitc Key. dis 40; Sommer's Cork Lined, set quality dis 50; Self-Measuring, Enterprise \$\psi\$ dos, \$\psi\$.600, dis 50; Self-Measuring, Lane's \$\psi\$ dos, \$\psi\$.600, dis 25; Self-Measurings. Victor \$\psi\$ dos. \$\psi\$.600, dis 25; Self-Measurings.	***
1	Felior Plates. \$ 5 100, dis 20 Files. \$ 5.00 to £, dis 35 Abornton's. uew list, dis 25 A Riley Carr \$ 4.00 to \$ 4.00 to \$ 5.00	SAN
me divert 6.	Files Abburn \$5,00 to £, dis 35 Abburn new list, dis 35 A Riley Carr 4, 40 to 1, & Riley Carr 4, 40 to 1, & Riley Carr 4, 40 to 1, & Riley Carr 40 to 1,	22222
Marine Se Sel	Moss & Gamble 44,50 to 1. J. Disston & Sons (new list) 41,50 to 1. J. Disston & Sons (new list) 41,50 to 1. Heller Bros. Horse Rasps 41,50 to 1. Sicholson 41,50 to 1. Gew American 41,50 to 1. Gis 40 40,50 to 1.	AMMINAR
BBB	Thion File Co. Fluting Machines. (nox, 45-inch Rolls. (also 5-inch Ro	×××
ECCAE	Sew American	2000
00 00	ieneva Hand Fluter, White Metal # dos #12, dis 25; frown Hand Fluter, Nos. 1, #15.00; 2, #12.00; 3, #10.00 # dos dis 25; hepard Hand Fluter, No. 84, #15,00; No. 95, #0.50; No. 118, #8.75. dis 30;	
COB	lark's Hand Fluter	
D	Fly Traps. # dos, \$3, ne	6 1
E	Fruit and Jelly Presses. nterprise Mg. Co. dis 251 Fry Pans. dis 65 urnished list as follows. dis 65	6 1
(47	Fry Pans. dis 60 0 0 0 0 0 0 0 0 0	1
3.8	Tauges. dis como American dis como American dis como American dis como	
N: : DO	Cimers C	I
DD:	ouble Cut, Douglass' dis 45 grouble Cut, Douglass' gro, \$13 oo, dis 25 gro, dis 25 gro, \$13 oo, dis 25 gro, dis 25 gro	0
	Giue Fois. dis 25 Inned and Enameled dis 25	1.5
RUUU	Gun Wads. M. C. B. E., 11 up	AAABE
UUUUU	. M. C. P. E., 7 & 8 4-90)	E
CH	Hutters. vert's Pat. Rope. dis 50 % orse and Cattle Ties, Covert's dis 15 % I ammers. dis 15 % Maydole's. dis 25 %	EDDDDDFF
UHHV MA	Anmers. dis 15 Maydole's. dis 15 Maydole's. dis 25 Martford Hammer Co. (new list July 1, '81). dis 25 Martford Hammer Co. (new list July 1, '81). dis 25 Martford Hammer Co. (new list July 1, '81). dis 25 Martford Hammer Co. (new list July 1, '81). dis 26 Martfo	1.19
KIY	umason & Beckley dis 5 s **Free. dis 5 s agnetic Tack, Nos. 1, 2, 3, \$1.26, 1.50 and 1.76, dis 2, &10 s elson 1 ool Works. dis 5 s arner & Nobie's. dis 5 s ps. dis 15 s ps. dis 15 s tikingon's Smiths'. 1156° % b net	Jan M
Pr Pr To	ovidence Tool Co., Hand Cuffs, \$15.00 \(\times \) dos. dis 10 \(\times \) ovidence Tool Co., Leg Irons, \$25.00 \(\times \) dos dis 10 \(\times \) ovidence Tool Co., Leg Irons, \$25.00 \(\times \) dos dis 25 \(\times \)	N
ReBr	Handles.—Door or Thumb Latenes. Nos	HPBAYDPC
Ba	dis se r	POP

**** *****	Hickory Firmer Chisel, large, & gross 5.00	iis Æ 10
*	Patent Auger, Ives' dis Patent Auger, Douglass' 9 set \$1.25. Patent Auger, Swan's 9 set \$1.25. Hangers.	ne ne
MAN N	Hangers Barn Door, old patterns dis 608	LU X
NAME MANNE	Harness Snaps. Anchor (T. & S. Mig. Co.) dis Henshaw's, list of 1½ changed to \$14.00 dis 55& Juda's, list of 1½ changed to \$44.00 dis 55& Fitch's (Bristol), list of 1½ change to \$44.00 dis 55&	60 %
NAMA!	Andrews dis Sargent's dis Sargent's dis Society dis So	10 %
** *********	Hatchets. Insight Blood.	0
	Claw, Nos. o 1 2 5. \$\phi\$ dos \ \cdot \cdo \cdot \cdo	200
	Claw. Nos. 125. # dos 0.00 0.00 10.00 Half. Nos. 125. # dos 8.00 8.60 8.60 0.00 Ax Pattern, Nos. 125. # dos 10.00 11.00 13.00 Hay Knives. "Lightning" # dos 83.00.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16.00 43.00 16	
	Gate, N. E. # dos \$10.13, dis 555.645.0 Gate, N. E. Rever-ible. # dos \$0.00 a\$ 0.00 dis 555.645.0 Gate, N. Y. State. # dos \$0.50 dis 60.810 Gate, N. Y. State. # dos \$0.50 dis 60.810 Gate, Automatic. # dos \$1.50, dis 60.810 Gate. Common Sense # dos pair, \$8.50, dis 60.810	*****
2	Gate, Seymour's. Gate, Shepard's. Nos. 10, 20 & 25, dis 50&10 Rolled Blind Hinges. Rolled Blind Hinges. Rolled Raised. "Providence" (over 12 ln., \$7.00 ¥ 100 h } . dis 10 Strew Hook and \$8, 10, 12 ln., \$7.00 ¥ 100 h } . dis 10 Strap	***
	Screw Hook and Eye	*
19	Hees. Riveted Shank. \$\psi\$ dos \$\xi_00\$, dis \$00 \text{Socket}. \$\psi\$ dos \$\xi_20\$, dis \$00 \text{Socket}. \$\psi\$ dos \$\xi_20\$, dis \$00 \text{Socket}. \$\psi\$ dos \$\xi_20\$, dis \$00 \text{Finters}. \$\text{dis \$10}\$ dos \$10 \text{Hers.}. \$\text{dis \$10}\$ down in Pattern. \$\text{dis \$20}\$ dis \$20 \text{Social C. S. Planters}. \$\text{dis \$20}\$ dos \$20 \text{dis \$20}\$ dis \$20 \text{dis \$20}	3
NHOO	Winsted & Lane, Scovill Pattern. dis socia; Missico. de dos. \$5, me Hocks. dis cocia; Hocks. dis cocia; Hocks. dis cocia; Bird Cago. Sargent's list. dis cocia; Bird Cago. dis 20- Cotton. dis 20- Cotton. Patented (N. Y. Maliet & Handle W.K.s), dis 50- Cotton. Patented (N. Y. Malet & Handle W.K.s), dis 50- Cotton (Humsson Beckley Mfg. Co.). dis 40- Belt. dis Cocia; Belt. dis Belt. dis Cocia; Belt. dis	***
CHH COOP	Octoo (Humason Beckley Mfg. Co.) dis solided	*****
TOP	Oat and Hat, Sargent's list. Oat and Hat, Reading. Oat and Hat, Sargent's list. Oat and Hat, Reading. Oat and Hat, Reading. Oat and Hat, Sargent's list. Oat and Hat, Reading. Oat and Hat, Sargent's list. Oat and Hat, Reading. Oat and Hat, Sargent's list. Oat and Hat, Reading. Oat and Hat, Sargent's list. Oat a	**
HH	Vhiffletree—Patent	1
CCEPVGAG	Oat and Hat, Reading dis soltro:	THE PERSON LAND TO THE PERSON LA
BR	urgen. Korse Shoe Co. Perkins' Improved Light, Medium and Reavy Weg \$4.874 Light, Medium and Reavy	A PART HA
NNWDWHILL		HW HORNER
CI	Ice Tougs . # doz \$6.00 dis 25&10 \$ hampion . # doz \$2.74 dis 15 \$ amily . # doz \$2.75 dis 15 \$	SSC
BE	Brass, 7 to 13 inches inclusive. \$\psi\$ 320 net rass larger than 13 inches. \$\psi\$ 350 net nameled. \$\	S
Ca	arriage (Jap'd Soc F gross)	EL
		DEPVD
Pi He Sh	por, Por, Jap'd. oor, Por Jias'd. oor, Por Jia	H J J J J H H H
Tu Na Me Hu	Lansterns. No. 0, \$8.65; No. 1, \$10.15 Dular	Be Be
Ya De Po	nkee	Si Ba
D.	nvex Kenector. Laws Mowers, nnsylvania. Philadelphia and Excelsior, new istdis 30 % Lemen Squeezers. rordain Lind	B. Pe
Own	make Tinned	Te

J	UZ.	
_	Townsend's Patent \$0.00 \(\text{ dos } \) dis 33\(\text{ dos } \) Jenning "Star" \$0.00 \(\text{ dos } \) doz net The "Boss" \$0 \text{ dos } \) 400 \$\(\text{ shot } \) 600 ton Chalk \$0.00 \(\text{ ton } \) 600 ton Chalk \$0.00 \(\text{ dos } \) 600 \$\(
dis	The "Boss". \$\\$\ \text{dos} \\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
2	11. Lake Chaik. Nos. o, 1, 2, 3, \$6.00. \$6.50, \$7.00, \$6.50. \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.00, \$7.0	
25 no no		
10	Cabinet, Bridgeport) dis 25&2 % Cabinet, P. & F. Corbin	
50	Langstroth & Crane's Liet, Jan. I. '77 Round Key. Nos. 1 to 5	
50 50 85 60	Flat Key	
40	"Shepardson" or "U.S."dls 35 % "Feiter" or "American"dls 33 % Platedls 33 % F Many's "Extension Cylindor."dls 33 % 2 %	
6c 10	Branford DOOR LOCKS, &C. Branford DOOR LOCKS, &C.	
10 9	Norwich P. & F. Corbin List prices as revised March Russell & Erwin Mallory Wheeler & Co. Mallory Wheeler & Co.	
10 1	Whipple Mfg. Co Trenton Lock Co Reading Hardware Codia	
15 %	Padlocks—Russell & Erwin. Mallory, Wheeler & Co. Norwich Lock Mfg. Co. Wm Wilsow & Gg. Co. and 2 % for cash	
5 5 0 5 %	Yale Lock Mfg. Co.'s "Standard" dls 40 % Romer's dls 30 % Conestogs dis 60 %	
5 5 0 %	The D. K. Miller, Flat Key. dis 1956 Scandinavian (Moore Bros.). dis 505 J. H. McWilliams dis 5 S. J. H. McWilliams dis 5 S. J. F. Piers dis 5 S. J. F. Pier	
0 %	"Star". dis 35 Lustro. 40% bottles, % doz \$2.00; % gros \$18.00 net	
5%	K Branford. K Norwick. Norwick. Norwick. Norwick. Norwick. Norwick. Russell & Erwin. Russell & Russell	
0 %	Dixon's (P. S. & W.) Nos. 1 2 3 4 4 4 4 4 5 4 4 4 4 5 4 4 4 4 5 4 4 4 4 5 4 4 4 4 5 4	
0 %	Perry'sNos. r 2 3 4 48'rd 5 8'rd 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
0	Hales'Nos. 11 12 13 15.00—dis 30 % 12 13 33.00 45.00—dis 50% 106.2 %	
*	A E Diets	
	Each\$5.00 7.00 10.00 20.00 50.00 60.00 Kleser's No. 55	
et śĸ	Pennsylvania dis 25 % Nos. 1 2 dis 40% 10 % Nos. 1 2 dis 40% Nos. 1 2	
XXX	Beef Shavers (Enterprise Mfg. Co.)	
MMMM	Lothrop's	
MMM	Melnases tintes. Stebbins Pattern. dis 70% to 5 Stebbins Genuine. dis 574-67 to 5	
发展 发	Steedoms Timed Reds dis 4-&10 Chase's Hard Metal dis 50&10 Steedom's dis 2-\$ Lincoln's Pattern dis 2-\$ dis 2-\$	
*	Weed's dis 15 f Boss, Nos. 1 2 3 dis 15 f 87.00 \$8.00 \$9.00 \$10.00 per doz	
	Boss, Japanned Finish. dis coato s Boss, Bronze Finish. dis soato s Valis. See Trade Report	
*	add \(\) to list\) Square Nuts	
XXXX	Washers. Conf. list. Nu. Crnckers. Go off list Table (Humason & Beckley Mfg. Co	(
MMMI	Turner & Seymour Mfg. Co	1
***	U. s. Navy P. S. C. Navy P. S. C. Navy P. S. C.	
9.9.1	Brass and Copper. dis of Malleable (Rammer's). \$\psi\$ dos \$\\$<.00, dis in \$\frac{1}{2}\$ Prior's Patent or "Paragon" Zinc. dis 6\frac{1}{2}\$	١
XXXX	Olmstead's, Tin and Zinc. dis 65 Olmstead's, Frass and Copper dis 65 Broughton's, Zinc dis 65	1
XXX	Ox Balls di cotto C	1
XXX	Pencils. Faber's Carpenters'high list, dis 5 5	1
X X	Dixon's Lead. \$\frac{9}{8}\$ fross \$\frac{9}{6}\$, \$\frac{7}{6}\$, net Dixon's Lumber. \$\frac{9}{8}\$ fross \$\frac{9}{6}\$, 76, net Dixon's Carpenters' \$\frac{1}{6}\$ for \$16\$	1
1000	Brass Head, Sargent's list. dis 45&10 5 Brass Head. T. & S. Mfg. Co	ı
2000	Porcelain Head, Judd's list	ı
6	Plaiting Machines. Magic. P dos \$10.00, net Astor Plaiting Machine. each are on dis not	ı
4000	Crown Platting Machines	ı
1000	Beach, Second Quality dis 25 Modding. Modding. Mis 15 Malley (Stanley R. & L.Co.) new list. Jan. '20 dis 20 to 6	ı
6	The Stanley (8, R. & L. Co.) new list, Jan. '7q. dis. 20&10 5 Balley's 'Victor' 'Co.) Defiance Adjustable dis 20&10 5	ı
6	Plane Irons, Butcher's.	ı
	Bench, Second Quality. Miolding. Bailey's (Stanley R. & L.Co.) new list, Jan. '70, dis accit of Bailey's (Stanley R. & L.Co.) new list, Jan. '70, dis accit of Bailey's "Victor". Bailey's "Victor". Bailey's "Victor". Bailey's "Victor". Mis accit of Bailey's "Victor". Mis accit of Bailey's "Victor". Mis accit of Mis accit	
	Pliers and Nippers. Button's Patent. Hall's Pat, Compound Lever Catalog Visconia 3316 5	
	Plane Irons. Sandusky Tool Co	
	Russell's Parallel. dis 25 P. S. & W. Cast Steel. dis 35 P. S. & W. Tinners' Cutting Nignars	
	Plumbs and Levels. Disston's	
	Stanley R. & L. Co.'s Non-Adjustable	
	Standard Rule Co. Non-Adjustable	
	Davis' Inclinometersdls 20 % Post Heie and Tree Augers. Samson Post Hole Digger	
1	Plumbs and Levels. Disston's Staniey R. & L. Co.'s Pat. Adjustable. dis 6x8. 5 staniey R. & L. Co.'s Non-Adjustable. dis 6x8. 5 staniey R. & L. Co.'s Non-Adjustable. dis 6x8. 5 Stanier Ratent Adjustable. dis 6x8. 5 Standard Rule Co.'s Now Adjustable. dis 6x8. 5 Standard Rule Co.'s Now Adjustable. dis 6x8. 5 Standard Rule Co.'s Non-Adjustable. dis 6x8. 5 S	
1	Pruning Hooks and Shears. Disston's Combined Pruning Hook and Saw	
1	dos #19.00, dis 20 5	
1	Dunlap's Saw and Chisel	
LMCH	10t House and Tackie	
- Deliver Co.	ap'd Clothes Line	
1100	Dunlap's Saw and Chisel	
B	Punches. leit or Drive	
100 00 PG	Punches. Punches. Pdos \$2.00; 2.25; 2.50, dis so \$ lest or Drive. dis cost \$ lesmis & Call Co. a Cast Steed Drive. dis cost \$ lesmis & Call Co. a Springfield Socket. dis cost \$ lesmis & Call Co. a Springfield Socket. dis cost \$ lesmis & Call Co. a Spring and Check. dis so \$ lesmis & Call Co. a Spring and Check. dis so \$ lesmis & Call Co. a Spring and Check. dis so \$ lesmis & Call Co. a Spring and Check. dis so \$ lesmis & Call Co. a Spring and Check.	
]	Dail. USliding Door, Wrought Brass % 20 43c dis 20 5	
B	Call. Sliding Door, Wrought Brass	
PT	D. for N. E. Hangers Small. Med. Large. er 100 feet	
	R. Torrey Reserco	

FR BB SUCCESS OF SUCCE

August 3, 1882.	
Razer Straps. dis 6e @ 65;	S trong Politics Square Relations Nels
Torreys. Rivets. Iron and Tinned, new list, Dec. 10, 1881	From Wood Bail Steam
Rode. Stair, Black Walnut dis 25 Stair, Black Walnut dis 20 Stair, American Patent dis 20 Rollers.	Stea Ives Dou Basi Rive
Acme (Anti-Friction). Kope. Mnfs' List, July 6 and 17, 1882	Brite Ree Hall Hold Ger Cast Tin Tin C Tin C Tin C Tin C Tin C Tin Tin C Tin Tin C Tin Tin C Tin Tin C
Hules. Chaple 5 Standard dls 66%&10 \$dis 55&10 Stanley dls 66%&10 \$dis 55&10 Stephens dls 66%&10 \$dis 55&10 Stephens dls 66%&10 \$ &	K Hin San Was
Mrs. Pott's Irons. Doubled Pointed	Tur Lak Lak Grii Si Jose Gen
Sand Paper. Baeder & Adamson's Flint, oo to 1/6. \$4.75 \(\tilde{\pi} \) ream Bassier & Adamson's Flint, 2. 2/6 & 3. 5.35 \(\tilde{\pi} \) ream Bassier & Adamson's Flint, Assorted. 4.75 \(\tilde{\pi} \) ream Baeder & Adamson's Flint, Assorted. 4.75 \(\tilde{\pi} \) ream Baeder & Adamson's Emery., \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (co) Baedes Harrison, \$4.75 \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Gage's (do 3) Gage's (do 3) Baedes Adamson's Emery \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) ream \$6.00 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) 1. (do 3) Baedes Harrison, \$4.75 \(\tilde{\pi} \) 1. (do 3)	
Sash Cords. # h sec ne Common. # h sec ne Patent. Silver Lake, Hemp. # h soc, die ic Silver Lake, Drab Cotton. # h soc, die ic Silver Lake, Drab Cotton. # h soc, die ic Raw Hide. # sod, dis no Raw Hide. # sod, dis no Sash Looks. Clark's, No. 1, \$10.00; No. 2, \$8.00 per gross. dis 33%	Swe
Clark's, No. 1, \$10.00; No. 2, \$5.00 per gross. dis \$359. Ferguson's	Gim Gim Fini t Trui t Con Basi Bru Lea
Sansage Stuffers or Fillers. # doz \$20 dis 30	Cha Dou Tr
Saws: Disston's Mill. Disston's Mill. Disston's Mill. Disston's Circular. Disston's Mill. Disston's Cross Cut. Disston's Hand, Panel, Rip, &c	Ame Spri
W. M. & C. MIG. Co. Cross Cuts. Livingston's Butcher and Kitchen	Toe Wi
Red, Polished and Varmshed w dox #1.50, dis 10%	Exec
Saw Hods	Loth Reed Disst Peac Clem Rose
Morrill's Most Mo	Brad Worn Gard Tr Butto
Chatillon's Etreka	Solid Solid Para Para Para Para Para
Denance Box	" Fai
Dission's. Patent Excelsier. dis 50 bission's Bunk Bros. Stanley Rule & Level Co. 'g. Varnished Hdls. dis 50 bission's Stanley Rule & Level Co. 'S. Black Handles. dis 50 bission's Stanley Rule & Level Co. 'S. Black Handles. dis 50 bission's Stanley Rule & Co. 'S. Gay's Double Action Ratchet Widox, 41n., \$0.00; 5 in., \$0.00; 6 in., \$1.2.00—dis 50 bission's Gay's Double Action Clutch Widox, 41n., \$0.00; 5 in., \$0.00; 6 in., \$0.00—dis 10 bission's Gowles Hdw. Co., No. 1 Extra. dis 50 bission's Gowles Hdw. Co., No. 1 Extra. dis 50 bission's Gay's Patent. dis 50 bission's Garles Hdw. Co., No. 4 and 50 dis 50 bission's Gar	
Champion	W Bras Brigi Brigi Brigi
Repews.	Copy Garv Tinn Cast Tinn Anno Anno Galv Galv Galv
Bench, Wood, Beech. # dos #3.co, dis 10 % Bench, Wood, Hickory. dis 20210 % Hand, Wood. Hickory. dis 20210 % Hand, Wood. dis 20210 % Hand Rail, Sargent's. dis 20210 % Hand Rail, Humason, Beckley & Co.'s. dis 20210 % Hand Rail, Am. Sorew Co., list of Jan. 1, 81. dis 20 % Jack (Wilson's). dis 20 % dis	Fenc Stub Japa Galv Steel Turn
Sorew Window Balancies. R. B. Hugunin's. No. 1, \$2.10; No. 2, \$1.75; No. 3	Ame
Shears and Scissors	Giras Giras Giras Bem Bem
Sheaves. Riding Door, M. W. & Co. Hist. dis 44 & 8 & 8 & 8 & 8 & 9 & 9 & 9 & 9 & 9 & 9	Websel We
Shevels and Spades. dis 15	Univ Univ Univ Peer Peer

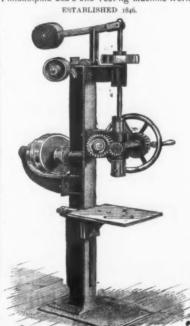
	, T	I
5 7 7	Shovels and Tongs. tron and Brass Head, R. & E. list	1
MANANA MANANA	Sintes. Square Frames, by case	6
5%%%%	Nelson Tool Works dis 40%10 %	1
0%	Spoke Shaves.	
c %	Iron. dlis 45 % Wood. dlis 30%10 % Bailey's (Stanley R. & L. Co.), new list. dlis 30%10 % Stearns' dlis 30%10 %	-
5%	Spoke Trimmers. \$\pi\$ doz \$\pi\$ n. oo. dis 40\pt 5\pt 5\pt 12.00 \$\pt 6\pt 5\pt 12.00 \$\pt 6\pt 5\pt 12.00 \$\pt 6\pt 5\pt 12.00 \$\pt 6\pt 6\pt 12.00 \$\pt 6\pt 12.00 \$	1
0%	No. 1, \$15.00; No. 2, \$12.00 € doz, dis 55.00 5 Douglass'	
200	Spoons. Basting	F
80 60 C	Reed & Barton	
6 C	German Silver	
0 1/2 1/2 1/2	Tin (Cowles Hdw Co.), case lots. dls 20 %	
0	"Lightning" Screw Plate	
0%	Lighthing "Screw Plate dis 10	
s %	Washita Stone No. 2, ₩ D 105g0 met Washita Stone, Silps No. 1, ₩ D 400 met Arkansas Stone No. 1, 4 to 6 lu ₩ D \$1.3 met	1
et iet iet	Arkansas Stone № 1. čto 9 in	
55555	Lake Superior (Chase). # b 20c, dis 10x5 5 Lake Superior, Silps (Chase). # b 45c, dis 10x5 5 Grindstones, Family, Loring's. dis 10x	
30gg	Grindstones, Family, Loring's did so % Stove Pollash. Joseph Dixon's.	
W.W.	"Mirror"	
50%	Dixon's Plumbago	
et	Steel. dis 50 %; full cases, dis 50 %10 %) Iron. dis 50 %; full cases, dis 50 %10 % Nickei Plated. add \$2.50 % \$5.00 % dos, net) Try Square and T Bevels. dis 50 %10 % Winterbottom's Try and Mitre. dis 20 %10 % Winterbottom's Try and Mitre. dis 20 %10 %	
1000 1000 1000 1000 1000 1000 1000 100	Winterbottom's Try and Mitre dis 20% 10 %	
X X X	Tinned Swedes Tacks. dis 40 % Tinned American Tacks. dis 50 % Swedes Tacks dis 50 %	
int iet 5%	Copper Tacks and Nails	
et et	Gimp and Lace Tacks, Timed	
et	Basket Nalls. dis 25 g Brush Tacks. dis 20 g Leathered Carpet Tacks. dis 20 g	
et .	Winterbottom's Try and Mitre. dis 20x10 % [Vacies, Brads, &Cc. List of April 2, 188a. Tinned Swedes Tacks. dis 40 % Tinned American Tacks. dis 50 % Swedes Tacks, all kinds. dis 50 % Swedes Tacks, all kinds. dis 30 % Copper Tacks and Nalis. dis 30 % Gimp and Lace Tacks. dis 90 % Finishing Nails. dis 40 % Finishing Nails. dis 40 % Finishing Nails. dis 40 % Finishing Nails. dis 25 % Basket Nails. dis 25 % Basket Nails. dis 25 % Basket Nails. dis 25 % Cigar Box Nails. dis 25 % Cigar Box Nails. dis 25 % Chair Nails. dis 336 % Chair Nails. dis 336 % Double-pointed Tacks. dis 40 % Tap Borers. dis 40 % Tap Borers.	din
***	Double-pointed Tacks dis 40% % Tap Borers. dis 20% Common and Ring dis 20% Ives Tap Borers dis 15%10% Enterprise Mg. Co dis 25% Tapes, Measuring dis 20% American dis 20% Spring dis 20% Thermometers. dis 20% Tobacco Cutters. dis 70%10% Tobacco Cutters. Tetapos Mg. Co. (Champion) dis 25% Enterprise Mg. Co. (Champion) dis 25%	p 8 6
2%	Enterprise Mfg. Co. dis 25 % Tapes, Measuring. dis 26 %	R
MMMN	Spring dis 24&10 % Thermometers. Tin Case. dis 70&10 %	
MMM	Tin Case. dis 70&10 %	-
MMM	Nashua Lock Co.'s. \$\vec{\pi}\ \ \doz \frac{\pi_1.00}{\pi_2.00}\ \ \dots \doz \frac{\pi_2.00}{\pi_2.00}\ \dis \dox \frac{\pi_3.00}{\pi_2.00}\ \dis \dox \frac{\pi_2.00}{\pi_2.00}\ \dis \dox \	
×	Tinners' Tools and Machines.	
MMM	Machines (P. 8. & W.).	
が	Transom Litters. Wollensak's Patent. Keither's Patent, new list, Feb., 1882. dis 20% roc 76 5 Excelsior. dis 50% rock 25	
MM	Trans- Game, Newhouse	
MMM	Mouse, Noval, Choker	
AMMA	Rat, "Decoy"	
MMMI	Tyawels	st
MMM	Ciement & dis 20 % Rose's Brick dis 1,5 % Brades' Brick dis 1,5 % Worrall's Brick and Plastering dis 20 %	prup
KMM	Garden	pe ve
MMM	Trucks (Warehouse, &c.	Pé M
AMMA	Penneld Block Co., Reduced list March 4, 1882.dBs. 25 \$\forall Value State Sta	F
MMM	Solid, Peter Wright's 15% Solid, Wilkinson's 135% Parallel, Parker's 135%	F
KWK	Parallel, Wilson's. dis 35&10 % Parallel, Howard's dis 25&10 % Parallel, Merril's. dis 25&10 % Odis 15 %	F
10 K	Parallel, Sargenvs	F
% 36	Parailel, Prentiss. dis 15&10 % Parailel, Simpson's Adjustable dis 25 % Family, 'List dis 25 %	F
MMM	Saw Filers, Bonney's # dos \$24.00, dis 20&10 % Saw Filers, Stearn's dis 20&10 % Saw Filers, Hopkins' # dos \$17.50, dis 10 % Fanding # dos \$17.50, dis 10 %	FF
AMMA	Cowell Hand Vises. dis 45&10 % Richardson's Vise and Anvil dis 25 % dis 25 %	C
X X	Washer Cutters. Fig. 25 Fig. 25 Johnson Fig. 25 Johnson Fig. 26 Fenny Fig. 26 Fenny Fig. 26 Fig. 27 Fi	po
MMM	Washers.—See Nuts and Washers.	st
MMM	Well Wheels	-
(M)	Bright and Annealed Nos. 0 @ 18, dis 50 @ 52\6 T Bright and Annealed Nos. 19 @ 25, dis 50 E Bright and Annealed Nos. 19 @ 25, dis 50 E	
ANNA	Coppered Nos o to 18 Ms o @ 18 dis 45 @ 4742 8 Garvanized, Nos o to 18 market list, dis 40 @ 4274 8 Tinned, Nos o to 18 dis 40 @ 4274 8 dis 40 @ 45 8 dis 40	
MMMI	Tinned Broom Wire, Nos. 18 to 25. dis 55 5. Annealed Fence, Nos. 8 & 9. dis 55 6. 22\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(
MAM	Galvanized Telegraph, Nos. 7 to 9	
AMM	Wire. Brass and Copper, list of June 10, 1880	
MMM	Japanned Barb Fence. P & 84cc Galvanized Barb Fence. P & 64cc Steel Music Wire, Nos. 12 to 27. P & 81.25, net Turner & Seymour Mfg Co., Picture Wire, low list.	
ot	Judd's Picture Wire	
MM	Wrenches. American Adjustable	
- 1	Baxter's Diagonal. dis 20% 5 % Coes' Genuine. dis 20% 5 % Coes' Mechanics'' dis 40% 10% 10% 10% 10% 10% 10% 10% 10% 10% 1	
THE PERSON	Coes' Pattern Wrought	
XX	Bemis & Call's Merrick 'sPattern. dls 20 % Bemis & Call's Brigg's Pattern. dls 35 % Bemis & Call's Crimder or Gas Proc. dls 25 %	
MMMMM	Wire Cloth, green, drab and black. \$\psi\$ sq. ft. \$\psi_{90}^{\circ}\$ net \\ \text{Wrenchea}_{\text{A}}\text{Adjustable}. \\ \text{Baxter's Adjustable} \times \\ \text{Baxter's Diagonal}. \\ \text{dis 2065} \times \\ \text{Baxter's Diagonal}. \\ \text{dis 2065} \times \\ \text{Baxter's Diagonal}. \\ \text{dis 20610} \times \\ \text{Coes' Pattern, Malleable}. \\ \text{dis 2060000000} \\ \text{Coes' Pattern, Malleable}. \\ \text{dis 50 g dirard Standard}. \\ \text{dis 50 g dirard Standard}. \\ \text{dis 50 g dirard Standard}. \\ \text{dis 50 g dirard Agl}. \\ \text{dis 60 g dirard Standard}. \\ \text{dis 50 g dirard Agl}. \\ \text{dis 18 miss \$\text{Call's Pattern} \text{ Combination}. \\ \text{dis 60 g dirard Agl}. \\ \text{Bemis \$\text{Call's Pattern} \text{ Combination}. \\ \text{dis 60 g dis 50 g g dirard Standard}. \\ \text{dis 20 lis Briggs Pattern}. \\ dis 60 g dis 60 g g g dis 50 g g g dis 50 g g g g g g g g g g g g g g g g g g	-
MMMM	Wringers,	-
MMM	Wringers. Per dox. Universal, XX, No. 3½6 45.00 Universal, XX, No. 3 45.00 Universal, XX, No. 1½6 54.00 Universal, XX, No. 1 50.00 Universal, XX, No. 6 6ach 10.75	
	each 10.75	

T	H
Shovels and Tongs.	
Shovels and Tongs. tron and Brass Head, R. & E. list dis 60&10&2 % Polished Steel, new list	1
Square Frames, by casedis 70 %	1
Less than a case	4
Spoke Shaves.	E
Less than a case dis 5&io 5	A
Bailey's (Stanley R. & L. Co.), new list dis 30%10 % Stearns'	
Spoke Triumers. ₱ dox \$10.00, dis 40&5 \$5 Bonney's. ₱ dox \$10.00, dis 40&5 \$5 Stearns' ₱ dox \$9,00, dis 20% to \$1 Ives' No. 1, \$15,00; No. 2, \$12.00 ₱ dox, dis 5,5% to \$7 Douglass' ₱ dox \$9,00, dis 15 \$	-
Ives'No. 1, \$15.00; No. 2, \$12.00 \(\tilde{V} \) doz, dis 55&10 \(\tilde{N} \) Douglass'\(\tilde{V} \) doz \$0,00, dis 15 \(\tilde{N} \)	ľ
Spoons. Bastingdis 60& 10& 10 \$	Ц
Riveted Table and Tea	Phi
Reed & Barton. dis 40&10&5 % Hall & Elton. dis 40&10&5 %	
German Silver	
Tin (P. 8. & W.), Teas. \$1.25 ₱ gross, net Tin (P. 8. & W.), Tables. \$2.00 ₱ gross, net	
Tin (Cowles Hdw Co.), case lots	
Spoons	
Stone	
Said Stone	
Washita Stone, Slips	
Turkey Oil Stone (Chase)	
Lake Superior (Chase). # h 20c, dis 10&5 % Lake Superior, Superior, Chase). # h 45c, dis 10&5 %	
Stove Polish.	
Stove Follow Process \$6.00, dls to \$5 dem. Process \$6.00, dls to \$5 dem. Process \$4.50, dls to \$7 dem. Process \$4.50, dls to \$7 dold Medal Process \$6.00, dls to \$7 dem. Process	
"Mirror" # gross \$6.00, dis 5 % Ruby # gross \$3.75, net Ridne Sum	
Dixon's Plumbago	
Steeldis 50 %; full cases, dis 50&10 %) Irondis 50 %; full cases, dis 50&10 %; cash	
Squares. dis so %: full cases, dis so&to % / 2 % Iron	
Winterbottom's Try and Mitre dis 200 to 5 Lacks Brade, & C. Lack of April 2, r88. dis 40 % Tinned Swedes Tacks. dis 40 % Tinned American Tacks. dis 50 % Tinned American Tacks. dis 50 % Tinned American Tacks. dis 50 % Copper Tacks and Nails. dis 30 % Swedes Hungarian Nails. dis 30 % Gimp and Lace Tacks, Tinned dis 40 % Finishing Nails. dis 40 % Finishing Nails. dis 40 % Finishing Nails. dis 50 % Gimp and Clout Nails. dis 50 % Gimp and Clout Nails. dis 50 % Finishing Nails. dis 50 % Finishing Nails. dis 50 % Backet Nails. dis 50 % Leathered Carpet Tacks. dis 50 % Leathered Carpet Tacks. dis 50 % Clgar Box Nails. dis 336 % Cohair Nails. dis 336 % Double-pointed Tacks. dis 40 % 55 Tap Borers. dis 50 % 55	3
List of April 2, r880. Tinned Swedes Tacks	1
Swedes Tacks, all kinds. dis 30 % Copper Tacks and Nails. dis 35 % To	1
Swedes Hungarian Nails	1
Finishing Nails	
Common and Patent Bradsdis 20 % Common and	N
Leathered Carpet Tacks. dis 20 %	C
Cigar Box Nails	inc
Tap Borers.	por
Tap Borers.	13
Tapes, Measuring.	RIE
Thermometers.	S
Tobacco Cutters. Enterprise Mfg. Co. (Champion) dis 25 %	P
Wood Bottom	
Enterprise Mfg. Co. dis 25 % Tapes, Measuring. dis 20 % Spring dis 26 % Spring dis 26 % Spring dis 26 % Spring dis 26 % Mashua Lock Co. dis 25 % Mashua Lock Co. dis 25 % Mashua Lock Co. dis 26 %	
Toe Calks. Winsted. ▼ 5 90, dia 5 Tinners' Tools and Machines.	
Machines (P. S. & W.). list add 20 % Tools (P. S. & W.). add 6 %	L
Transom Litters. Wollensak's Patent. Kelber's Patent, new list, Feb., 1882. dis 20&10&6 % Excelsior. dis cocroc %	-
	An
Tra mgs Game Newhouse dis 16 5	
Mouse, Round Wire. # doz holes, 10%c Mouse, Round Wire. # doz \$1.50, dis 10 % Mouse Cage, Wire. # dog \$2.50, dis 10 %	1
Mouse, Catch-em-alive ₩ doπ \$2.50, dis 10 % Rat, "Decoy" ₩ doπ \$1.00, dis 10 %	
Trawels	
Need's Brick and Plastering dis 15 % Disston's Brick and Plastering dis 20 % Peace's Plastering	T
Clement & Maynard's	stan pres
Brades Brick and Plastering dis 20 % Garden dis 20 %	abov
Triers. Butter and Cheesedls 25 %	veni
Trucks (Warehouse, &c.	Min.
Vises.	Pow
Solid "Crown" (A. H. Hildick)40 to 100 h, 150 net	For For
Solid, Wilkinson's	Pr
Parallel, Wilson'sdis 10 % Parallel, Howard'sdis 35&10 %	For
Parallel, Sargent's dis 15 % Parallel, Backles and Union dis 55% 10 %	to
Parallel, Oval Slide dis 40 % Parallel, Double Screw Leg dis 40 %	For
Parailel, Prentiss	For
Saw Filers, Bonney's p dos \$24.00, dis 202.05 \$ Saw Filers, Stearn's dis 202.05 \$	For For
Saw Fliers, nopkins # dos \$17.50, dis 10 % Reading dis 45&10 %	For
Pennieid Block Co., Reduced Hist March 4, 1882.dls. 25 \$\foatin \foatin \foati	Fo
VV Smith's Patent	pon Fe
Washer Cutters. P doz \$12.00, dis 25 %	char
Washers.—See Nuts and Washers. Well Wheelsdis 60810810	Pr
Wire. Brass and Copper, list of June 10, 1880.	Н
Bright and Annealed Nos. o @ 18, dis 50 @ 52\6 \frac{1}{2} \	
Coppered	
Tinned, Nos. e to 18	
Wire- Brass and Copper, list of June 10, 1880	
Galvanised Telegraph, Nos. 7 to 9	
Fence Staples. # B 556 @ 54c	
Annealed Fence, Nos. 8 & 9. Annealed Grape, Nos. 1 to 14. Galvanised Telegraph, Nos. 7 to 9. # h 7 dc Galvanised Telegraph, Nos. 7 to 9. # h 8 dc Galvanised Telegraph, Nos. 10 to 11. # h 10 dc Galvanised Telegraph, No. # h 10 dc Fence Staples. # h 5 dc # dc # h 7 dc # h 7 dc # h 5 dc Galvanised Telegraph # h 9 dc	S
Steel Music Wire, Nos. 12 to 27. B 81.25, net Turner & Seymour Mfg Co., Picture Wire, low list	

	States. Square Frames, by case	4
	Siedses and stone Breakers. Nelson Tool Works	-
	Spoke Shaves. Defance Metallic dis 20%10 %	E
	Spoke Shaves. dis 20&10 %	A
	Stearns'	-
	Spake Triumers. \$\psi\$ dos \$10.00, dis 40\\$5 \$\psi\$ Strangy \$8.	r
	Douglass'	ı
	Basting dis 50% LOX 10 % Riveted Table and Tea. dis 55 % Solid Table and Tea dis 55 %	Ph
	Britannia	
	Holmes, Booth & Haydens dis 40% 10% 5 % German Silver dis 20% 10 % Cast Steel Silver Plated dis 20% 10 % 20% 5	
	Tin (P. S. & W.), Teas	
	Speens	
	"Lightning" Screw Platedis 10 %	
	Stone	
	Washita Stone	
	Arkansas Stone No. 1. 4 to 6 in	
	Turkey Slips (Chase). 4 to 8 in., \$1.00 % h Turkey Slips (Chase). \$2.50 % h dis no 5 Lake Superior (Chase). # h zoc, dis no 5	
	Lake Superior, Slips (Chase) # 15 45c, dis 10&5 % Grindstones, Family, Loring's	
	Stove Polish P gross \$6.00, dls 10	
	Gold Medal	
	Rising Sun. # gross \$5.75, net Dixon's Plumbago. # b 8c, net	
	Steel	
	Squares. Steel	
	Winterbottom's Try and Mitredis 200:10 %	
	List of April 2, 1880. Tinned Swedes Tacks. dis 40 %	
	Swedes Tacks, all kinds	1
	Winterbottom's Try and Mitre Markers Brades, & Cc. List of April 2, r880, rimed Swedes Tacks. dis 40 % rimed Swedes Tacks. dis 40 % rimed American Tacks. dis 50 % rimed American Nails. dis 50 % rimed	1
	Finishing Nafts. dis 25 % 5 Trunk and Clout Nails. dis 25 % 5 Common and Patent Preds. dis 25 %	
	Basket Nails	1
	Leathered Carpet Tacks	de
	Chair Nails	inc
	Tap Borers. dis 20 % Common and Ring. dis 15&10 % Ives Tap Borers. dis 15&10 % Enterprise Mfg. Co. dis 25 %	ap 6 fe
	Enterprise Mfg. Co	3
	Tapes, Measuring. dis 20 % American dis 20 % Spring dis 246:10 %	RI
1	Spring dis 24&10 € Thermometers. Tin Case dis 70&10 €	1
Į	Enterprise Mfg. Co. (Champion) dis 25 % Wood Bottom	F
I	Spring dis 24:0 Thermometers Thermometers dis 76:10 Tobacco Cutters dis 26:10 Tobacco Cutters dis 25 Enterprise Mfg. Co. (Champion) Wood Bottom \$\psi\$ doz \$\frac{3}{2}\$ (c.) dis 40\frac{5}{2}\$ All Iron \$\psi\$ doz \$\frac{3}{2}\$ (c.) dis 40\frac{5}{2}\$ Nashus Lock Co. \$\psi\$ doz \$\frac{3}{2}\$ (d.) dis 26\frac{5}{2}\$ Wilson \$\psi\$ doz \$\frac{3}{2}\$ (d.) dis 25 Tope Calks. dis 35 \$\psi\$	
l	Toe Calks. Winsted. Tinners' Tools and Machines. Machines (P. S. & W.)	
ı	Tinners' Tools and Machines.	
l	Tools (P. S. & W.)	L
l	Transom Litters. Wollensak's Patent. Reiher's Patent, new list, Feb., 1882dis zok tok fo g Excelsiordis gok tok fo	-
I	Traps.	An
١	Game, Oneida Patiern. dis 5525 5 Game, Blake's Patent. dis 45 5 Mouse, Wood, Choker Blake's Patent	
	Mouse, Round Wire. \$\frac{1}{2}\$ doz \$1.50, dis 10 \frac{5}{2}\$ Mouse Cage, Wire. \$\frac{1}{2}\$ doz \$2.50, dis 10 \frac{5}{2}\$	
	Trans. Game, Newhouse dis 5,6 x, 5 Game, Oneida Pattern dis 5,6 x, 5 Game, Oneida Pattern dis 5,6 x, 5 Game, Blako's Patent dis 5,6 x Mouse, Wood, Choker P doz holes, 16\(\) ₀ c Mouse, Round Wire P dos 81.50, dis 10 \(\) Mouse Cage, Wire P dos 82.50, dis 10 \(\) Mouse Cage, Wire P dos 82.50, dis 10 \(\) Mouse, Catch-em-ailve P dos 82.50, dis 10 \(\) Tewels, Recov P dos 82.00, dis 10 \(\)	
	Tyewels. Lothrope' Brick and Plastering. Lothrope' Brick and Plastering. Mis 25 % Reed's Brick and Plastering. Mis 25 % Brace's Brick and Plastering. Mis 25 % Disston's Brick and Plastering. Mis 25 % Brace's Plastering. Clement & Maynard's. Mis 25 % Rose's Brick. Mis 15 % Brades' Brick. Mis 25 % Brades' Brick. Mis 25 % Garden. Mis 25 % Triers. Mis 25 %	
l	Peace's Plastering. dis 20 % Clement & Maynard's. dis 25 %	star
	Rose's Rick	upo
	Garden	pes
	Butter and Cheesedis 25 %	pen
	Trucks (Warehouse, &c., Penfield Block Co., Reduced list March 4, 1882dls. 25 %	
	V Solid BoxList of July 1, 79, dis 35 % Solid "Crown" (A. H. Hildick)40 to 100 h. 150 net	For
	Vises. Soild Box	For
	Parallel, Parker's dis 10 % Parallel, Wilson's dis 35&10 % Parallel, Howard's dis 35&10 %	For For
	Parallel, Sargent's	to
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ĺ	Parallel, Frentiss	For For
	Saw Filers, Bonney's. B dos \$24.00, dis 20&10 \$	For
	Reading # doz \$17.50, dis 10 % Cowell Hand Vises dis 45&10 %	For
	Washer Cutters.	Col
	Washer Cutters. F doz \$12.00, dis 25 5 Johnson's. F doz \$41.00, dis 25 5 Penny's. F doz \$44.00 all \$16.00, dis 55 5 Appleton's. F doz \$40.00 all \$16.00, dis 55 5	POL
ĺ	Washers.—See Nuts and Washers.	cha sta
ĺ	Well Wheels	8637
	Wire. Brisht and Copper, list of June 10, 1880dis 20 %	
	Bright and Annealed	H
		H
	Coppered	H
	Coppered. Nos. o @ 18 dls 4c @ 4°4 g Garvanized, Nos. o to 18 market list, dis 9c @ 49 g Tinned, Nos. o to 18 dis 4c @ 4°4 g Cast Steel dis 4c @ 4°5 g Tinned Broom Wire, Nos. 18 to 25 dis 4c g Annealed Fenne, Nos. 18 to 25 dis 5c g dis 5c g dis 5c g	H
	Coppered. Nos. o to 18	H
	Coppered. Gaivanized, Nos. o to 18	H
	Coppered. Nos. o to 18	H
	Coppered. Gavanised, Nos. o to 18. market list, dis 00 49% 57 Tinned, Nos. o to 18. Cast Steel	H
	Coppered. Garvanized, Nos. o to 18	H
	Wire. Brass and Copper, list of June 10, 1880	S
	Clothes Line Wire, Galvanized & coil 25 26 40c net Wire Cloth, green, drab and black & 30, ft also net	S
	Clothes Line Wire, Galvanized. F coil 25 3 40c net Wire Cloth, green, drab and black. F coil 25 3 40c net Wrenches. American Adjustable. Galvanized dis 45 5 Restar's Adjustable.	S
	Clothes Line Wire, Galvanized. F coil 25 3 40c net Wire Cloth, green, drab and black. F coil 25 3 40c net Wrenches. American Adjustable. Galvanized dis 45 5 Restar's Adjustable.	S
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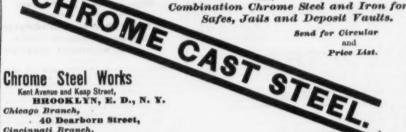
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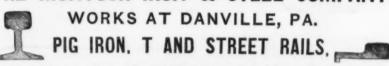
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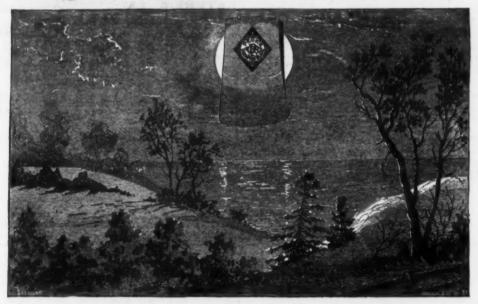
Plunge the Digger into the ground, as shown in cut, Fig. 1, and when the soil is loosened pull out the lever with one hand, as shown in cut, Fig. 2, which will press the dirt between the blades; then draw the Digger from the hole, keeping hold of the lever with one hand and the handle with the other. When the Digger is clear of the hole, you can deposit the load anywhere within reach by simply pressing down the lever, which will open the blades and the dirt will fall from between them. The Digger is then ready for another plunge. The steel blades are nine inches long, and the whole tool five feet long. For sale at Hardware and Agricultural Stores.

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Corrected Weekly by Lloyd, Supples & Walton.) Terms, 30 days. For 60 or 90 days, interest added at 10% per cent. per annum.	Bound Head Brass Iron
Anvils. Peter Wrights. # 5	German Silver.
Trenton	Tinned. Springs.—Torrey. Gem No. 2 small Jan'd
A pple Parers	" No. 2 medium Jap'd Coll No. 10. per gross net Warner Door Springs, per doz.
	Tinned
Xees. ### Hunt's Kentuckv and Yankee.per dos \$10.00 @ 10.40 Robert Mann.** #### Richland Chief.** ### Richland Chief.** ### Richland Chief.** ### Richland Chief.** ### Richland Chief.** #### Richland Chief.** ##### Richland Chief.** ##### Richland Chief.** ##### Richland Chief.** ##################################	Stove Polish,—Gem
Augers and Auger Bits New List January 7, 1880.	Fire Fly. Tacks. Shoe Nails—4-8, A.c.: 356-8, 70 W Double Pointed Tacks.
Bates' Nut Augers. dls 40% to \$ Cook's Augers. dls 40% to \$ Watrous' Ship Augers. dls 15 \$ Benjamin Pierce Auger Bits. dls 40% to \$ Griswold Auger Bits. dls 40% to \$ Griswold Auger Bits. dls 40% to \$ Jennings' dls 10% to \$ Jennings' dls 10% to \$ Benney's Pat. Hol. Augers, list \$48 \$ doz. dls 26% to \$ Bearns' Pat. Hol. Augers, list \$48 \$ doz. dls 25% to \$ Jennings' dls 10% to \$10%	Traps. Genuine Oneida—Newhouse Im. Oneida—Newhouse list, firs Vises.—Solid Box. Trenton new
Cook's "dis 40&10 % Jennings' dis 10, 10&10 % Bonney's Pat. Hol. Augers, list \$48 \(\) doc. \(\) dis 10, 10&10 \(\) dis 20, \(\) dis	Wrenches.—Agricultural Coes' Genuine
Light and Commondis 15&10 \$	
Bells. Bavin Bros. Mfs. Co. Light Hand Bells dis bi&to 5 Swiss Pattern Hand Bellslow list dis 40&10 5 Connell's Door Bells	Bright or Ann'd, Ne. o to 18 No. 19 to 26 No. 27 to 36 Coppered, o to 18
Gt. Western & Kentucky Cow, new listdis 50 %	Coppered, o to 18 Tinned Broom Wire. Galvanized Barb Wire. Painted Barb Wire. Galvanized No. 7 to 18Mark
Bering Machines. Upright, without AugersList 5-50 } dis 45 % Angular, without Augers	Peerless No. 256.
Philadelphia "new list dis 70&10 % Stanley, Wrought Shutter	
Stanley, Wrought Shutter dis coato	PITTSBUI
Butts.—Cast Fast Joint. Narrow	TERMS.—Note or acceptance at rate of exchange on New York, cent. for cash, if remitted within
# Acorn. Loose Pin	For fluctuations
Wrought Loose Pin	on card rates see the burgh Trade Report
Loose Joint dis 45&to \$	The following are card rates. Flat Bar.
Parker dis 70&2 % Clark dis 70&2 % Shepard dis 70&2 % Luli & Porter dis 60% & 10 %	134 to 4 by %4 to 1 inch
Hunter s Common Solten and Solt No. Provides to S	% % and % by % to % inch
Chapter Scott Constitute	98, 8 and 36 by 78 to 78 total Rounds and Sg 1 to 176
Chisels.—Socket Framingdis 6c&re 5	356 to 4
Butcher's	% to 116 2.90 16
Defice Mills.—Box and Side, new list Jan. 1, 1880dis 45%	Half Oval and Ha
Enterprise	16 to 116 by 5-16 to 36 tuch
Enterprise. Gusiery.—Walden Pocket.— new list net Penna Knife Co.— new list net Landers, Frary & Clark, J. Russell & Co. Lamson & Goodnow Mig. Co. and Meriden Cutlery Co., Manu- facturers' prices net. Drawing Knives. Hart Mig. Co. s.— dis 6:&10 8 Adjustable Handle.— dis 20 3	% Inch, Nos. 13 and 14
Brawing Knives. Hart Mfg. Co.'sdis 65&10 % Adjustable Handledis 20 %	11 and 12
Fry Pans. dis 45 7 Tinned. dis 45 7 \$\tilde{q}\$ dos.\$\tilde{q}\$\$, \$\tilde{q}\$\$ 4.50 \$.50 \$.50 \$.50 \$.50 \$.50 \$.50 \$.50	3\(\)4 to 6 by \(\)4 and \(\)-16 to 3\(\)4 to 3\(\)5 by \(\)4 and \(\)-16 to 3\(\)6 by \(\)4 and \(\)5 to \(\)4 to 3\(\)6 by \(\)4 and \(\)5 to \(\)4 to 3\(\)6 by \(\)4 and \(\)5 to \(\)6 to \(\)5 and \(\)5 by \(\)4 and \(\)5 by \(\)5 and \(
Tinned	1 to 1% by 14 and 5-16 " 14 to 76 by 14 and 5-16 " 15 and 16 by 14 and 5-16 "
Files. dis 40 9 Disston dis 40 9	1% to 6 by 36 to 3-16
Butcher	to 1% by Nos. 11 and 12 % and 13-16 by 16 to 3-16 % and 13-16 by Nos. 11 and 12
FO. 0 1 3 4 5 6 7 8 Files. Nicholson dis 40 3 Diaston dis 40 3 Butcher \$4.50 8 Fluting Machines. Eagle—36 in. roll. —64. in. roll. —54. in. roll. —55. in. roll. —65. in. roll. —55. in. roll. —65. in. roll. —55. in. roll. —65. in. r	% and 21-10 by % to 3-10 % and 11-16 by Nos. 11 and 12 % and 9-10 by % to 3 16
Geneva Fluter. dis 25 % Favorite com. Fluter & Sad Iron 50 net Hammers,	inch by Mos. 11 and 12
Maydole Hammersdis 15 7	154 to 4, Nos. 13, 14 and 15
Jandles. Dission Loop Handles Crosscut	134 to 2, No. 21. 134 to 2, No. 22. 134 to 2, No. 22.
Hunt	15-16, 1, and 1/8, Nos. 16, 17 and 18 15-16, 1, and 1/8, Nos. 19 and 20 15-16, 1, and 1/8, No. 21
Ausable Poled & Pred and 29 24 24 23 26	76, Nos. 13, 14 and 15.
Blued and Pointed. 31 28 2 25 24 22 26 26 26 26 27 27 28 26 26 27 27 28 28 26 27 29 29 29 29 29 29 29 29 29 29 29 29 29	36, No. 21
Hinges	13-16, Nos. 10, 17 and 18. 13-16, Nos. 19 and 20. 13-16, No. 21
Globe. 20% Hay and Straw Knives. Hay and Straw Knives. Lightning	13-10, NO. 22 94, NOS. 13, 14 and 15. 84, NOS. 10, 17 and 18.
Wadsworth 10.50 Walton Straw Knives 17.00 Walton Straw Knives 17.00 Walton Straw Knives 17.00 Walton Straw Knives 17.00 Walton Straw Knives 18.00 Walton Straw Knives 19.00 Walton Straw Walton Wal	14. No. 21 14. No. 22 11.10. Nos. 12. 14 and 15
Walton Straw Knives. 17.0	11-16, Nos. 16, 17 and 18
# dox. \$5.00 5.50 6.50 7.50 8.50 10.00 12.50 dis 50 9	11-16, No. 22 56, Nos. 13, 14 and 15 56, Nos. 16, 17 and 18
No	96, NO6, 19 and 20 96, NO, 21 56, NO, 22
Lanterns Buckrye	\$\frac{\text{k}}{\text{ and } \frac{\text{log}}{\text{ by } \text{ for 3-16}}\$ 124 to 6 by \$\frac{\text{ by 3-16}}{\text{ or 3-16}}\$ 13 to 136 by \$\text{ log 3-16}\$ 1 to 136 by \$\text{ log 3-16}\$ 1 to 136 by \$\text{ log 3-16}\$ 134 and 13-16 by \$\text{ log 3-16}\$ 135 and 13-16 by \$\text{ log 3-16}\$ 136 and 13-16 by \$\text{ log 3-16}\$ 136 and 13-16 by \$\text{ log 3-16}\$ 136 and 9-16 by \$\text{ log 3-16}\$ 136 to 2-, \$\text{ Nos. 13-14 and 13-16}\$ 136 to 2-, \$\text{ Nos. 16-17 and 18-16}\$ 136 to 2-, \$\text{ Nos. 16-17 and 18-16}\$ 136 to 2-, \$\text{ No. 20-16-16}\$ 136 to 2-, \$\text{ No. 20-16-16}\$ 136 to 2-, \$\text{ No. 20-16-16}\$ 136 to 3-, \$\text{ log 3-16}\$ 136 to 3-, \$\text{ log 3-16}\$ 137 to 3-, \$\text{ log 3-16}\$ 138 to 3-, \$\text{ log 3-16}\$ 139 to 5-, \$\text{ log 3-16}
Excelsior. dis 30 % Lawn and Garden Pumps. List &conditions Holiand Patent. List &conditions	9-16, No. 21. 9-16, No. 22. 9-16, No. 23.
Mattocks. Long and Short Cutternew list30 Pennsylvania Pattera	Nos. 16, 17 and 18
Enterprise Mfg. Co.'s Measuring Faucets dis 25 % Stebbins' Gates	No. 23The prices under Hoop Iron d
Holiand Patent	1-10c per lb. extra will be ch.
Meat Cutters. Dixon's	to specified lengths. Barrel Hoo
Stowe dis 30 % Hale's new list, dis 50, 10&2 cash American dis 25 %	g to 11 lbs, per set of 6 hoops 8 lbs, and less than g lbs, per se Less than lbs, per set of 6 hoops
Enterprise Stuffers. dis 30 % Enterprise Stuffers. dis 25 % Planes.—Sandusky Tool Co dis 20 %	Extras for Cutting to Length All Iron, including Tire
Brass Liquor Cocks, new list Jan. 1 1858. dis 105 Cork Lined " dis 705 Meas Cutters.	Ties. 1-toc per lb. extra will be ch lighter than the lightest indivat 1-toc per lb. extra will be char to specified lengtha. Barrel Hoo 1st to 2 ln. cut to 5 to 1: lbs. per set of 6 hoops. ålbs. and less to 6 hoops. Less than lbs. per set of one see Less than lbs. per set of one see Less than lbs. per set of one see Lestra for Cutting to Length All fron, including Tire. No. 9 and heavier. Plow Slabs. Wings. Sheet Iron
Butcher's	
Picks.—New list	No. 18 to 214.10 No. 22 to 244.36
Lamont Combination	No. 27
	rst quality (A)
Stanley Ivory	Creative Co. 41. 45.
Stanley Vory	Nos. 14 to 20
# doz\$8.00 10.25 13.75 15.60 16.75 19.50 Lbs 50 100 150 200 250 300	Nos. 25 and 26
# dos\$8.00 10.35 13.75 1.6.50 16.75 19.50 Lbs 50 100 150 200 250 200 250 200 Equares. Steel and Iron	Nos. 25 and 26
# dos\$8.00 10.35 13.75 14.60 16.75 19.50 Lbs 50 100 150 200 250 300 Squares. Steel and Irondis 50 %; full case, dis 50&10 5 Try Squares. Stanley	Nos. 35 and 26
# dos\$8.00 10.35 13.75 10.60 16.75 10.50 Lbs 50 100 150 200 250 300 Squares. Steel and Iron	Nos. 25 and 26
# dos \$8.00 10.35 13.75 16.60 16.75 19.50 Lbs 50 100 150 200 250 300 Squares. Steel and Iron dis 50 %; full case, dis 50 % Try Squares. Stanley dis 50 %; full case, dis 50 % Try Squares. Stanley dis 50 % dis 50 % Office and Sharpened Blade, Boxed and Sharpened # dox \$9.00 Clipper No. 10, Bronsed Blade, Boxed and Sharpened # dox \$8.50 Clipper No. 5, Painted Red, Boxed and Sharpened # dox \$8.50 Clipper No. 5, Painted Red, Boxed and Sharpened # dox \$8.50 feet and \$8.50 fee	Nos. 25 and 26
# dos	Nos. 25 and 26
Try Squares. Stanley. Try Squares. Stanley. Station and Stanley.	Nos. 25 and 26
# dos	Nos. 25 and 26
# dos \$8.00 10.35 13.75 16.60 16.75 19.50 Lbs 50 100 150 200 250 300 Squares. Steel and Iron dis 50 %; full case, dis 405 to 5 Try Squares. Stanley dis 405 to 5 Try Squares. Stanley dis 405 to 5 Try Squares dis 405 to 6 dis 4	Nos. 25 and 26

	r	THE IRON AGE
	Screws. Flat Head Iron	Nails. See Pittaburgh Trade Report.
	Speens	Best Quality Refined Cast Steel.
	Special State Special Stat	1-16 and 23/6 to 3 inches 130 Mand 3/6 to 4
	Gem No. 3 small Jap'd	Oil Well Steel Forgings
	Standard Spring Hinges— Single No. 0, per dos. net. 1.50 "No. 1, 1.60 Stecks and Dies	Ordinary Sixes, \$6 to a inch Crucible. Open Hearth Round 7/66 to -15 and 3/4 to 3 inches 8/60 to \$4 and 3/4 to 6 9/60 70 7-32 inch 10/60 80 \$10 12/60 100
-	Stove Pellah.—Gem W gross, 84, 40, 415 15	\(\) and 3\(\) to \(\) \(\
	Double Pointed Tacks	list. Cut to specified lengths, 1/2c extra. **Fammer Cast Steel.** Crucible Cast Steel.** **Table Cast Steel.
-	Arapa, Genuine Oneida—Newhousae	Crucible Cast Steel. 854c Open Hearth Cast Steel. 7c Sheet Steel. 7c Sheet Steel. 7c Bessemer & Best. 2d Qual. 3d Qual. Open Hearth
5	Wire, Bright or Ann'd, Ne. o to 18dis 50 to 52% 5 No. 19 to 25dis 50 to 52% 5	Beet. 2d Qual. 3d Qual. Open Hearth To 21 gauge. 1996; 100 10. extra for each additional gauge. Cut to multiples or specified lengths, 9c. extra. Macodianeous Cast Steel.
20.00.00	Bright or Ann'd, Ne. o to 18. dls 50 to 3245 5 "No. 18 to 25. dls 5745 to 60 5 "No. 27 to 35. dls 6256 to 55. Coppered, o to 18. dls 45 to 1	Auger and Auger Bit
	Galvanized No. 7 to 18Market List, dis 42% to 45 % Wringers. Peerless No. 246	Pick plain (hammered: 100 and Mattock beveled (rolled) 8560 Skate Steel 98 Table Cutlery, plain 7560
AN MAIN	Novelty, No. 10. 42.00	Skate Steel
* * * *	PITTSBURGH. Merchant Iren. TERMS.—Note or acceptance at 60 days, with current	Forged Crank Pins and Lathe Spindles
* * * * *	rate of exchange on New York, or a discount of a per cent. for cash, if remitted within 10 days from date of invoice. For fluctuations and discounts	Boller Wire Boy and Flue Sheets To Bessemer.
***	on card rates see weekly Pitts-	Boiler, Fire-Box and Flue Sheets, not less than thick.
* *	The following are card rates. Flat Bar. 134 to 4 by 34 to 1 inch	Smoke Stack, to shape
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×	Rounds and Squares. 1 to 174	Horse and Shoe Rasp. 5960 Horse and Shoe Rasp. 5960 Spring Cast Steek. 6960 Spiral and Taper, cut to lengths. 70
d	To 176	Tire Cast Steel. 1X3-10, 36X3-16 and 14
d	74 to 114	M and %x14 and 3-32 and 12 g. 100 Solid Safe Cast Steel . 7460
55	Half Oval and Half Round. 14 to 14 inch	Agricultural Implement Cast Steel. Fork and Rake, Crucibie. See Horse Rake Steel, cut to lengths, Crucible. See Hoe. Crucible. 754C Corn Stalk Cutter, Daysled
et.	Wagon Box Iron. 74 Inch, Nos. 13 and 14	Beveled Hoe and Shovel Steel in Pars. 8%c Crucible Piow Steel in slabs. 7%c
* *	" " 17 and 12	Spring
% 00 %	3 to 6 by 14 and 5-16 inch. 2.70 13 to 3 to 5 to 4 and 5-16 ii 2.70 1 to 136 by 14 and 5-16 ii 2.70 1 to 136 by 14 and 5-16 ii 3.80 4 to 7 to 17 to 18 d 5-16 ii 3.80	Axie Billets.
5	\$\frac{\partial}{2}\$ and \$\frac{\partial}{2}\$ by \$\frac{\partial}{2}\$ and \$\frac{\partial}{2}\$ by \$\frac{\partial}{2}\$ to \$\fr	Grain Drill Bars *190 *1
M M	1 to 1% by 16 to 3-16. 3.10 1 to 1% by Nos. 11 and 12. 3.20 26 and 13-16 by 16 to 3-16. 3.40 26 and 13-16 by 80s. 11 and 12. 5.50	Rolled Hammer Billets 45c Terms.—Four months: a per cent. discount for cash, tf remitted within 30 days. Furnace Floor and Straightening Plates. 25c
*	## and 11-16 by Nos. 11 and 12	Furnace Floor and Straightening Plates
ot XX	## 13 and 14	Furnace Floor and Straightening Plates 23cc Housings and Castings not otherwise specified. 3 c Guide Plates. 3 c Sand Rolls and Coupling boxes. 3 c Sand Rolls and Platons, large size 34cc Plate Mill Castings under 50 lbs. 4 c Spur and Bevel Wheels, large 4 c Spur and Bevel Wheels, large 4 c C Spur and Bevel Wheels, large 5 c Spur and Bevel Wheels, large 6 c Spur and Bevel Wheels, large 7 c Spur and Bevel Wheels, large 6 c Spur and Bevel Wheels, large 6 c Spur and Bevel Wheels, large 7 c Spur and Bevel Wheels, large 6 c Spur and Bevel Wheels, large 6 c Spur and Bevel Wheels, large 7 c Spur and Bevel Wheels, large 7 c Spur and Bevel Wheels, large 7 c Spur and Bevel Wheels, large 8 c Spur and Bevel Wheels, lar
75 et	1½ to 2, No. 20. 3.50 1½ to 2, No. 20. 3.50 1½ to 2, No. 21. 3.70 1½ to 2, No. 21. 3.70	Spur and Bevel Wheels, large
** *	15-16 1, and 15-8 Nos. 13, 14 and 15. 15-16 1, and 15-8 Nos. 19 and 18. 15-16 1, and 15-8 Nos. 19 and 20. 15-16 1, and 15-8 Nos. 19 and 20. 15-16 1, and 15-8 Nos. 20.	Engine Castings, light
10 23	76, Nos. 13, 14 and 15 3-9c 76, Nos. 16, 17 and 18 3-7c 36, Nos. 19 and 20 3-6c 3a, No. 21 3-9c	2 to 2 in. " 15 to 72 in. "
23 18 19	13-16, Nos. 10, 17 and 18	14 to 11 lh. 72 to 16 lh. 14 to 11 lh. 72 to 16 lh. 14 to 11 lh. 72 to 16 lh. 14 to 14 to 15 lh. 15 lh. 16
00	82 Nos. 16, 17 and 18	Dry White Lead in barrels
50	56, No. 21. 4.20 56, No. 22 4.50 11-15, Nos. 13, 14 and 15, 4.40 11-15, Nos. 15, 15 and 15, 20	Freights equalized with all points where White Lead is made. Terms: Note at sixty days, or if paid within 15 days from date of invoice a discount of 2% per cent. will be allowed but yet otherwised.
hha	Nos. 19 and 20	be allowed, but not otherwise. Window Ginas. Per Box of so Feet.—Discount, in small lots, 60%10 % on single strength, 50 % 20 % on double; in car loads.
* *	\$\int_{\chi}\$ Nos. 15, 17 and 18	on single strength. So & 20 % on double; in car loads, So&5 % on single strength. To & on double. Single Strength. Size. AA. A. B. O.
et et	98 NO. 22 4-80 98 NO. 22 4-90 9-16, Nos. 13, 14 and 15 4-90 9-16, Nos. 15, 17 and 16 4-70 9-16, Nos. 19 and 20 4-80 9-16, No. 22 4-90 9-16, No. 22 4-90	
*		
×	O-10, NO. 23. 14 and 15. 5.10	90 X 52 TO 30 X 54 15.00 14.50 12.00 90 X 55 TO 34 X 50 17.25 15.50 13.50 34 X 50 18.25 17.25 15.00 35 X 50 TO 40 X 50 TO 18.25 17.15 17.00 30 X 50 TO 18.25 17.15 17.25 Double Strength.
***	The prices under Hoop Iron do not apply to Cotton Ties. 1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.	
MINN N	1-10c per lb. extra will be charged for cutting floops to specified lengths. Barrel Hoops. 14 to 2 in., cut to length.	36 X 28 to 24 X 36 21.00 18.50 15.75
DEREN	Barrel Hoops. 13t to 2 in., cut to length. 5 to 11 lbs, per set of 6 hoops	30 X 50 to 34 X 56
KKKKKK	Plow Slabs	An additional to per cent, will be charged for all glass more than 40 inches wide. All sizes above of inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.
MAN ON	Common. Charcoal, Juniata.	GARRY IRON ROOFING CO.,
% 00	NO. 22 to 24	
NAMO	All shee s No. 18 and lighter, over 30 inches wide, not less than 2 roc extra. Wood's Putent Planished Sheet. 1st quality (A)	I.
50 %	Nos. 14 to 20	GARRYS
MMM	Current discount, 35 % 27% 5. Coal Screen from. 194 by 96 by 5-163.cc 1 by 96 by 5-163.cc Angle from.	
10	14, 13/2 and 23/4 Inch	1RON ORE PAINT AND CEMENT. 79 & 81 Columbus Street, CLEVELAND, OHIO.
10 %	136 by 16 " " 3.60 176 by 16 " " 3.60 T Rail. 3.90 8 lbs. to the yard. 2.90 20 lbs. to the yard. 2.80	Send for circulars and price lists, No 15.
成成成立と	156 by \$4	TISCHER'S JACK.
× 455	350 by % and % spikes for so and 28-lb, Rail.	No Repairs, Packing or Alcohol.
10 %	Juniata Nail Rods	Handler, stronger, longer
ic ic ic	Guard Iron, %4x%4x% and %4x%4x%	hydraulic jack.
	Oropper Bars	GEO. A. OHL & CO.,

	HE IRON AG	Ð
	Naile. See Pittaburgh Trade Report.	T
	Best Quality Refined Cast Steel. Square, Flat, Octagon and Round. 12 inches, inclusive	10
	Square, Flat, Octagon and Round. % to 2 inches, inclusive	0
	5-32 inch. 22 14 inch 30 Oil Well Steel Forgings 22	100
	Machinery Steel. Bessemer A	
	Ordinary Sizes, % to 2 inch Round	n
	Ordinary Sizes, % to 2 inch Round 7, % 50 5-16 and 3% to 3 inches 866 66 4 and 4% to 3 inches 966 70 7-32 inch 10% 86 10 10% 86 10 10% 6	
	Square, Flat and Octagon, 1/2c extra throughout thist. Cut to specified lengths, 1/2c extra.	10 5
	Crucible Cast Steel. Open Hearth Cast Steel. Sheet Steel.—Crucibie.	ée
	Sheet Sieel.—Crucible. Bestemer & Bestemer & Const. Heart	t i
	Best. 2d Qual. 3d Qual. Open Heart To 21 gauge. 1:3/6/2 10 90 70 10. extra for each additional gauge. Cut to multiples or specified lengths, ½c. extra.	"
	Miscellaneous Cast Steel. Auger and Auger Bit. Axle Steel for carriages and wagons	70
	Auger and Auger Bit. 8 Axle Steel for carriages and wagons. 8 Frog Points and Plates. 1 Side Bars. 5 Pick. plain (hammered). 1 Auger and Mattock. beveled (rolled). 8	60
1	skate Steel. Table Cutlery, plain. Table Cutlery, beveled (rolled). Pike and Cant Hook. Coal and Granite Wedge. Spinale. subject to Machinery classification. Fran Spring Steel.	96 96
	Pike and Cant Hook. 85 Coal and Granite Wedge. 85	60 60
	Spinoise, subject to Machinery classification 85 spinoise, subject to Machinery classification 85 spinoise State Spinoise State Spinoise State Spinoise State Spinoise State Spinoise State Spinoise Spin	60 60 00
	Piston Rods, plain	6C 1C
	Boiler, Fire-Box and Flue Sheets not less the	
	Boiler, Fire-Box and Flue Speets not less the	300
		8c 8c
	Locomotive Tank Steel	90
	Square. Round. Half Round and Flat Bastard. 8 inch and over. Mill Saw, 8-inch and over. Mill Saw, 8-inch and over. Horse and Shoe Rasp.	80 60
	Spring Cast Steel. 6 Spiral and Taper, cut to lengths.	60 60
	IX IA and over	60
	Hoe. Crucible	60 60
	Beveled Hoe and Shovel Steel in Bars. 8: Crucible Piow Steel in slabs. 9: Bessemer and Open Hearth	>BC
	" spiral and taper, cut to lengths	660 660
	A vie Billets	100
	Sieigh Shoe Cut to lengths and tapered 5 Soythe Back Steel Grain Drill Bars Points 9	40 40
	Rolling Coulter Blanks out and speched	140 140
	Rolled Hammer Billets	140
	Terms.—Four months: a per cent. discount for cast fremitted within 30 days. ### Refile and Castings. Furnace Floor and Straightening Plates	160
	Guide Plates	C
	Pipe Mill Castings under 50 lbs.	40
	Pipe Mill Castings small size. Rolling Mill Castings under so lbs. Spur and Bevol Wheels, large. Palleys up to 30 Inches. over 30 Inches. Engine Castings, light.	0 160
	heavy	
	6 to 7 in. diam 7 to 20 in. long	.6c
	After Cot. 1, 23 to ref in. After Cot. 1, 238, no discounts with be made at a tlement as herefolfore, prices quoted being net. White and Red. Strictly Pure White Lead in Oil. B Tin Pails, 3c. 2 no ver keg price; 12/6 n 7 p. die. 10 % n over keg price; 12/6 n 7 p. die. 10 % n over keg price; 15 % n ca.	46C et
	White and Red Lend. Strictly Pure White Lead in Oil. in kegs. 7c.: in B Tin Pails. 1/2c. B n over keg price; 121/2 B 7	25 Fin
	Pails. 10 % over keg price; 121% fb. 7 pails. 10 % over keg price; assorted, 1 to 5 m ca 3c. per b ever keg price	ns,
	Lead is made.	
	Terms: Note at sixty days, or if paid within 15 de from date of invoice a discount of 256 per cent. w be allowed, but not otherwise.	vill
	For Box of to Feet.—Discount, in small lots, box; on single strength, to & 20 % on double; in car log	0 %
	Single Strength.	-
	5 x 8 to 10 x 15 88.25 \$7.50 \$7.00 \$6	5.50
	11 X 14 to 10 X 24 9.25 8.50 8.00 7	7.75
	26 X 30 to 26 X 44 14.50 13.25 10.75 9	0.50 0.50
	90 X 56 to 34 X 56	
	Double Strength. 6 X 8 to 10 X 15	.00
	18 X 22 50 30 X 30. 17.25 X 575 14.00 15 X 36 50 24 X 30. 19.75 17.28 14.50 36 X 38 50 24 X 36. 21.00 18.50 15.75	
	96 X 36 to 30 X 44. 23.25 21.25 17.28 26 X 46 to 30 X 54 to 30 X 55 to 30 X 55 to 30 X 55 to 30 X 56 to 30 X 54. 25.75 23.25 19.25 30 X 50 to 34 X 56 to 32.75 24.20 25.75 24.20 27.75 24.20	
	30 2 00 00 40 2 00	911
	An additional 10 per cent, will be charged for glass more than 40 inches wide. All sizes above inches in length and not making more than 81 unit inches, will be charged in the 84 united inches brack.	ed et.
		=
	GARRY IRON ROOFING CO.	
	Iron Roofing and Crimped Siding,	
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	GARRYS	
	PATENT	

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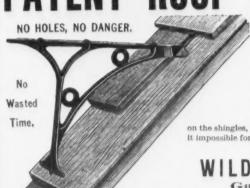
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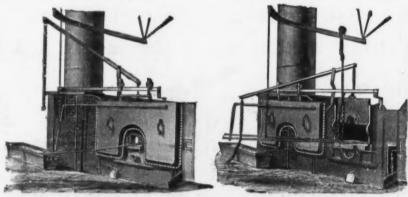
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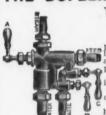
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	-
Cutlery.—Pocket, American Shear Co.'sdis 40 Butcher Knives, Wood's, Lap Bolster, Square Handledis 30 Stoak Knives	×
Lap Bolster, Oval Handledis 20	1%
Butcher, Common Round Handle, Wood'sdis at Shoe Knives, Wood'sdis at	光光田
Dividers,-Cook's	
Dog Collars	-
Dog Mussles, Automatic	-
Imitation Torrey's Rod	62
Warner's dog 1.	25
Door Steps.—Thurston sdis 50	50
Drawer Knobs.—Thurston's	400
Morse Straight Shank dis 25	×
Emery.—Wellington Mills. P b 1 Walpole Emery Mills. P b 1 Turkish in 10 B cans. P b	e ic
Standard Mfg. Co. Kettlesdis 40 & 10 Standard Sauce Pans	
Felice Plates, -Wrought	
Files.—American File Codis 40	
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Pierce'sper dos	8
Glass Cutters.—Combination Glass Cutter and	
Grub HoesK. P. & Co.'s No. 2, \$11.50 @ doz.dis 20	5
Hammers,—Maydole's	E.
Hangers & Rollers. — Anti-Friction dis 50	10.00.00
Hand Screws die	,
Hatchets.—C. F. Dowse new list	
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Hartford Hammer Codis 15 9
Hangers & Rollers.—Anti-Friction
Hand Screwsdis to s
Hatcheta,—C. F. Dowse new list
Hay K nivrsLightning
Hoes,-W. C. & Co.'sdis 50 %
Hooks and Staples Brewers' (new list) dis 60 %
Horse Nails No. 6 7 8 9 National Finished23 .21 .20 .19dis 21 5 Putnam Pointed28 .20 .25 .24
No. 6, 23: No. 7, 21; No. 8, 20; No. 5, 19.
Ice Cream Freezers Packer's, new list, dis to \$
Knobs "Norwalk." New list

	wrought screw Hook? D 61:
٠	Hoes W. C. & Co.'sdis c
	Hooks and Staples Brewers' (new list) dis 6
ı	Horse Nails No. 6 7 8 9 National Finished
d	Horse Nails.—Bridgewater
	Ice Cream Freezers Packer's, new list, dis a
11.	K nobs.—" Norwalk." New list
-	Lanterns - Guarded, No. 99
	Triangular
	Lawn MowersThe "Daisy."
1	12 in. cut
-1	16 in. cuteach.

	Hurricane	
•	Lawn Mowers The "Daisy." 12 in. cut.	þ
	18 in. cut each,	
	Lend.—Sheet	7
_	Locks.—Norwalk dis Eagle Cabinet dis Eagle Trunk Cis Eagle Trunk dis dis	
-	Manure Forks, -W. C. & Co	939
0 %	K. P. & Co., Pick Cutter, \$16.00 @ dosdis Measuring Tapes.—Eddy'sdis	3
5,5	Meat Cutters.—Miles' Challengo. dis Hale's, (new list). dis 40 & American. dis	1
5%	Money Drawers.—Tuckeriar's Am, P doz \$2	
0 16	Mouse Traps.—Delusion ₩ doz Novelty # doz	
5%	Nails W keg.	
08	Ollers.—Zinc and Findis	

0 %	
55	Ment Cutters.—Miles' Challenge
5%	Money DrawersTuckerlar's Am P dog \$2:
100 P	Mouse Traps,—Delusion # doz : Novelty # doz
5%	Natio W keg.
0%	Oilers.—Zinc and Fin
0%	Ox Bows.—Extra finished and varnisheddis 1 1½ in., \$\partilde{V}\$ dos. pair\$7.00 2 in., \$\partilde{V}\$ dos. pair. \$10 1½ in., \$\partilde{V}\$ dos. pair 9.00 2½ in., \$\partilde{V}\$ dos. pair. 12
00.	Paper.—Tarred Sheathing
58	Picksk. P. & Co., Adze Eye, 5 to 6 h \$12.00dis 3 K P. & Co., Adze Eye, 6 to 7 h \$13 00 dis 3
.15 .38	Finnes
75	N. Y. Tool Codls 2
.25	English Irondis 2
3 %	Bailey's
276	PitersVom Cleff & Co.'snet

ς	English Irondis
ĸ.	Plated Ware,—Rogers & Bro
č	Plated Ware Rogers & Brodis 40
٠,	PitersVom Cleff & Co.'snet
	Button's Wire Pliersdis 3
2	Plumb & Levels Stanley R. & L. Co dis 5&
3	Pocket Knives American Shear Co.'sdis
3	Potato Diggers W. C. & Co., reduced list dis
6	Pulleys Acme or Excelsior, 1% in P dos
	Acme or Excelsior, 2 in @ doz
e	Pulley Blocksdis
3	Pumpa, Union Manufacturing Co.
٠.	Iron Cisterndis
3	Iron Pitcher Spoutdis
2	Copperdis
0	Copper
2	Carriage in 10 b papers (new list)dis
2	Copperdis 33
1	Razors.—Torrey'sdis
ы	Razor StrapsTorrey'sFull
а	Rules.—Stanley, Boxwooddis 6636&
Н	Stanley, Ivorydis 55&
ч	Sad Irons Common
ч	Laundry D
1	Tailors' Geese
Л	Tailors Geese
ч	Sandpaper.—Baeder & Adamsondis
d	Banapaper, Bacder & Adamson
н	M. B. & D. dis 256
П	Saws.—Hand Saws, Disston'sdis
Н	Wheeler & Clemson
1	Cross-Cut Saws.
1	W. M. & Co., Common Tooth, No : foot
ч	W. M. & Co. Champion Tooth 20 foot
1	W. M. & Co., Champion Tooth
	Dission s, Common Tooth Floot obc dis

ı	Cross-Cut Saws.
l	W. M. & Co., Common Tooth, No : foo
ı	W. M. & Co., Champion Tooth P foo
1	Diaston's, Common Tooth F foot 68c dis
ı	Disaton's Great American Tooth @ foot 68c dis
	Boynton's Lightning Tooth 9 foot
	M. R. & D., Hand Sawsdis 33
	W. M. & Co.'s Circular Sawsdis
	Richardson Brosdis
	Saw Blades, -Disstondis
	W. M. & Cdis
	Welch & Griffith, Extra @ doz i
	Welch & Griffith, No. 2 P doz
	Nenles, -rairbanksdis
	SerewsAiken's Flat-Head Ironnew list, dis
Į	American Flat-Head Ironnew list, dis
l	American Flat-Head Brassnew list, dis
ı	American Round-Head Brassnew list, dis
ı	American Round-Head Ironnew list, dis
ı	Grilley Round Head Nickel-Hated, Common.dis
ı	Scythes,-Clippers, in boxes doz s
ı	Shaves,-Kimball's ? inch
ı	Watrousdis
	Shears,-American Shear Co., new listdis
ı	ShotTatham's
	Showels -O Ames new list dis

ScythesClipp	ers, 1	m c	ю	(8)	B											1.5	1
Shaves,-Kimb	all's.														爭	и	X
Watrous																	
Shears, -America	can a	she	ar	C	0	n	e	W	1	Ĺ	18.						1
ShotTatham's																	
Shovels, -O. Am																	
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M. B. & D																	
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Sinks,-Magee P	aten	4		-	-												-
Snow Shovels.	Min	Dog	363		Til	200				1.0		-			100		
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Acme	24.12	22.		0.0	*			٠.	,			2			4		-3
Imperial Club																	
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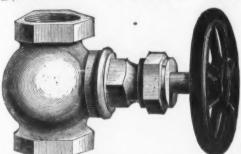
ı	Minks.—Magee Patent
ı	Snow Shovels Malleable Tips
١	SkatesUniondis
ı	Acmedis
ı	Imperial Club list No. 5, \$3.75 P pair; list No.
ı	85.00 W pairdis:
	Stocks and DiesKing'sdis 1060
ı	Tacks, -A. Field & Son'sdis yok 1
ı	Pittsfielddis 30&1
I	Swedes Tinneddis 45&1
	Swedes Irondis 30&1
	Gimp and Lacedis 30%1
	Copper Tacksdis 30&1
	All balances on listdis 25&1
	Traps.—Oneida, Genuinedis 33
	Oneida, Imitation, H. & Ndis 5
	Blake'sdis 40&1
	Viscs.—Simpson's Adjustabledis 25.8
	Howard Vise Codis 2
	Prentiss'dis 2
	Weather StripsPacker's # doz 84
	Browne's Flexfole Rubberdis 3
	In 25 feet boxes: No. 1, 1/4 in. wide, @ yard. 100.; No.
	2, 1 in., 15c.; No. 3, 1 in., 20c.; No. 4, 1 in.
	Black Walnut Spring Weather Strips @ doz \$3

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Prentiss'di
Weather Strips,-Packer's # doz
Browne's Flexfole Rubberdi
In 25 feet boxes: No. 1, 1/4 in. wide, @ yard. 100.;
2, % in., 15c.; No. 3, % in., 20c.; No. 4, 1 in
Black Walnut Spring Weather Strips # dos
Window Springsd
Babcock's No. 3 # gross
Babcock's No. 4 @ gross
Wire Cloth -"Clinton"
Wire Fence.—Scutt's Patent, Painted
Scutt's Patent, Galvanized
Wire Goods, -Gate Hooks and Eyes, &c., ne
list
Wrenches, -A. G. Coe'sdis 40
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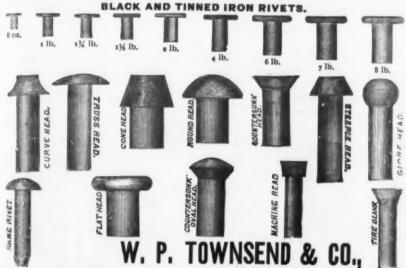


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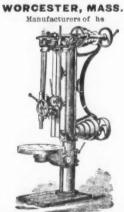
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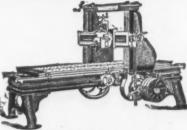


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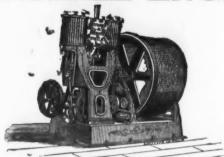
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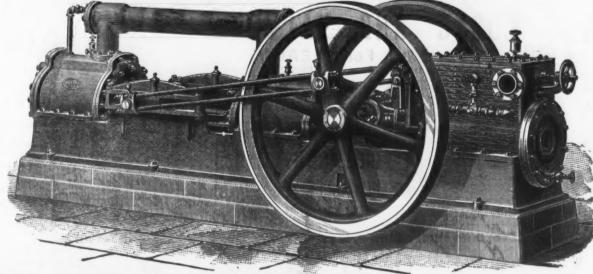
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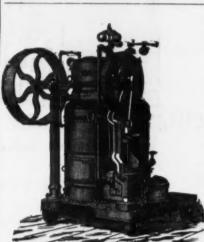
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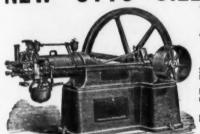
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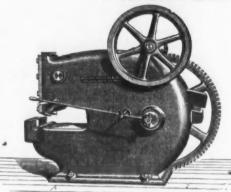


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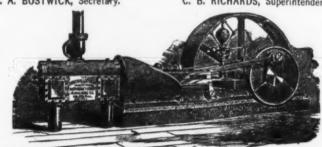
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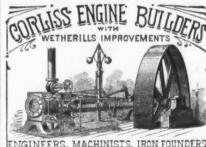
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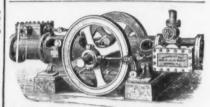
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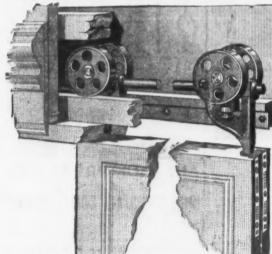
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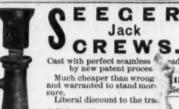
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